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ATARI USER

Vol. 5, No. 9

September 1985

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SuperScript

writes letters, invoices, reports, tables, documents, it sorts, edits and even checks spelling.

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ATARI USER



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News made daily

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FREEBIE

This month's *Freebie* for Atari Users and tape purchasers is guaranteed to entertain and delight you. And there's just an aitch in sight.



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Here's a

IBM, Epson QX-50,

Acorn Electron, ACTS

Ericsson...and the

that fits them all—the

At last, your computer can have an Epson printer.

Even if it is only supposed to be compatible with... own brand printers (like Atari).

Our latest printer, the QX-80, has a revolutionary new interface called PIC (so means Printer Interface Cartridge and that's it on the right). The cartridge slips into the back of the QX-80 and enables the QX to understand commands from the host computer.

So if you've ever wanted to have an Epson printer for your micro but thought you couldn't have it is

But first, read about the QX-80's other exciting advantages.

What happens when I change computers?

Gone are the days when you had to scrap a perfectly good printer just because it didn't go with your new computer.

Once bought, your QX-80 stays put. (Epsons tend to stick around for ages anyway, now we've taken tradition a little further.)

When the time comes to upgrade your computer, you simply go back to your Epson dealer and buy the corresponding new PIC.

It's a lot cheaper than being forced to sell/scrap out your printer only to buy another one. And in effect it makes the QX-80 your printer for life.



sa plug for any Atari,

E-B, Apple IIc, BBC,

Sirius/Apricot, Compaq,

this is the printer

the new Epson GX-80.



A printer for life? What's the catch?

Sheer unremitting boredom.

The GX-80 takes all the fun out of printer ownership. You can't shout, "Lousy printer! It's fouled up again!" because it won't. It's just as reliable as every other Epson.

Nor can you gleefully chuck it merely because you've changed computers — PC's soon to that.

But all is not lost. You could change your computer a lot more often. Just for fun.

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Notes of my diary are missing. The number of our last debentures and holders have all grown and grown. Thanks to THE way to help fully understand all the input changes now taking place in the world of



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1991, long to complete
and printing separate
grades. Plus all other
non-mandatory special
writing up requirements
required a certificate, using
paper issued for each phase
1991: pre-1990 credit
exam/1991



Special assignment
Guide to many electronic and 400-board supercomputers in operation and a team doing real-time control systems. Five in (Chicago) to (Miami) is currently launch of the IBM 4341, currently, whereas with a top 400 board and large 400-board is working now.

Year	Number of cases	Percentage of total cases
1980	10	1.0%
1981	15	1.5%
1982	20	2.0%
1983	25	2.5%
1984	30	3.0%
1985	35	3.5%
1986	40	4.0%
1987	45	4.5%
1988	50	5.0%
1989	55	5.5%
1990	60	6.0%
1991	65	6.5%
1992	70	7.0%
1993	75	7.5%
1994	80	8.0%
1995	85	8.5%
1996	90	9.0%
1997	95	9.5%
1998	100	10.0%
1999	105	10.5%
2000	110	11.0%
2001	115	11.5%
2002	120	12.0%
2003	125	12.5%
2004	130	13.0%
2005	135	13.5%
2006	140	14.0%
2007	145	14.5%
2008	150	15.0%
2009	155	15.5%
2010	160	16.0%
2011	165	16.5%
2012	170	17.0%
2013	175	17.5%
2014	180	18.0%
2015	185	18.5%
2016	190	19.0%
2017	195	19.5%
2018	200	20.0%
2019	205	20.5%
2020	210	21.0%
2021	215	21.5%
2022	220	22.0%
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Silence over Comdex

AT&T bosses were being tight-lipped about what was going on. The company would spring on the computer industry at the giant Comdex exhibition in Las Vegas.

Parsons, concluding in the week during the count-down to the show, said the firm was preparing to announce a number of new additions to its ST family — among them a 1-megabyte model, the 1040ST.

One report said the new machine would be offered here with a colour monitor for about £1,000. It was apparently compatible with both the planned 200ST and existing 200ST, and feature a built-in 720x colour text-capable dot driver.

It is a line thought that Atari would preview its 32-bit workstation, the TT, based on the 20000 processor.

But sales and marketing manager Bob Harding dismissed the rumours as "just speculation completely unfounded."

He told Area User: "I have no knowledge of these products being shown at Comdex but even if they were, I wouldn't necessarily expect you would bring them up at this dinner."

"We tend to use exhibit sites as show-rooms to show you are capable of producing our own rights of products."

Hardy, nevertheless, stated: "I necessarily follow — after all, look what happened to the 1300ST."

Half-price 800XL hits the Christmas marketplace

AT&T is poised to dominate the UK colour market this Christmas as a result of introducing a multi-million pound deal with Diann.

It involves the sale of the entire stock of 800XLs — some 100,000 machines — to the High Street giant.

Now Diann are slashing the price of the 800XL package by 50 per cent, bringing the complete version down to just £399.95 in the run-up to the festive season.

The cut-price offer includes an 800XL, joystick, 1010 cassette recorder and two pieces of software, which would have usually costed for a total of £107.

At the same time the 800XL sits in the Diann chain — which now also includes the Garry system — will also be offering the 800XL with disc drive and 13000 personal at

reduced at a bargain price of £199.95 down from £399.

"They will be selling an awful lot of 800XLs in the run-up to Christmas," says Bob Harding, Atari UK's marketing boss.

In fact this will mean that this year Atari will not only be a leader, but will actually dominate the entire market.

The company has gone to considerable lengths to ensure that independent dealers are not left with stocks of 800XLs and so are unable to compete with the new High Street prices.

But Atari has retained a small stock of the machine to ensure that any outstanding Christmas orders can be filled.

However production of the

800XL will soon fall — until April, production may not rise above 10,000 units, says Harding, in the UK at least.

The 13000 personal, which also rose at Christmas, has the 13000 and will meet Atari Harding only alone claim that there will be a supply in 1989 now.

Production will also rise in the 1010 cassette version, and the need for replacement parts from Atari, added.

Made in Japan, the 800XL produced exclusively from the 13000 and will enter at the same price as the 1010 — £24.95.

Atari has also announced that it is to slash the price of its 13000 disc drive from £199 to £130.

With what we are now offering the public, there will be nothing to prevent them coming away with the machine they get why, Bob Harding.

RAM discs for ST

A RAM disc is nothing more or more RAM disc, as far as it goes on. At the ST disc is 10-millisecond speed of operation has been achieved by Area Computer. The company says its AT-Ram package enables users to be accessed and written to between 40 and 60 times faster than with a normal disc drive.

Additional features include a Help facility and an option for expanding floppy disc write speed by up to 50 per cent. A Ramer also enables the user to save more than RAM by downloading the operating system into Ramer. Price: £20.95.

ROM UPDATE — AT A PRICE

The 16-bit up-dated ROM version of the 1300ST operating system should be available here before the end of the year. But it will cost ST owners about £25 for the kit to update their machines.

Although the ST was originally expected to arrive on the market with a ROM update, the machines sold in the UK so far have all been this dated.

Many people who bought these machines felt that having them would eventually be able to

make decoder ROMs made as an extra or no cost.

But this is not to be the case. Area UK marketing boss Bob Harding said: "There will be a small charge to updating ST owners for the upgrade kit. I expect it to be about £25."

"I believe this to be reasonable. The disc operating system was never intended to be a stopgap until the ROM version became available."

It has always been an

option, just as the ROMs will be at option when they become available any day now.

Many existing ST owners aren't interested in running Atari programs — they are quite happy with the disc operating system in view of all the 80286 software that is available.

An additional surprise says the 1300ST ROM chips are currently completing their life, leaving before going into full production and should be available soon.

1-2-3 clone released

AN enhanced Lotus 1-2-3 clone has been released in the United States for the 1300ST.

Called the VIP Professional, its features include 640K interface, 16 colours, multiple windows, mouse compatibility and pull-down menus.

Available from VIP Tech, a division of Santa Barbara Computers, it comes £99 price tag — claimed to be three times lower than that of its rival — a disc to run to £149 in November.

A full manual is included in the box.

Hacker emulator

AT&T can't even emulate hackers' behaviour but its rights with Bell and other companies, but without losing sight of the law.

It is all thanks to a new software system called Hacker from Bellcom. The company also makes a hacking kit, which is not a very high technology of the day but is extremely efficient and a better option.

The idea of the system is to use a computer to emulate a hacker's behaviour and to help him to do it.

The system is a very simple one and it is not a very high technology. It is a very simple one and it is not a very high technology.

The system is a very simple one and it is not a very high technology.



MAN, under the name of the company, is a very simple one and it is not a very high technology.

The system is a very simple one and it is not a very high technology.

The system is a very simple one and it is not a very high technology.

The system is a very simple one and it is not a very high technology.

BIRTHDAY BONANZA

Help of a friend, that

Software House's general manager John Howells said. In October each week during the month a selection of products will be given to the public.

And we will also have a special place to make up an order which will be given to the public.

The Software House's general manager John Howells said. In October each week during the month a selection of products will be given to the public.

p-System for the 520 ST

AT&T can't even emulate hackers' behaviour but its rights with Bell and other companies, but without losing sight of the law.

The system is a very simple one and it is not a very high technology.

The system is a very simple one and it is not a very high technology.

The system is a very simple one and it is not a very high technology.



Tough cookie..

THE new Mark 1 system for the Atari was built to withstand the most demanding conditions of the market.

It also has a very low cost. Two, the system and the Atari are the most powerful.

The system is a very simple one and it is not a very high technology.

pForth gets the seal

THE new Mark 1 system for the Atari was built to withstand the most demanding conditions of the market.

It also has a very low cost. Two, the system and the Atari are the most powerful.

TEACH-IN FOR THE ST

PUBLISHERS Clarendon are producing a range of teaching material for the ST.

The system is a very simple one and it is not a very high technology.



New link to micro

THE new Mark 1 system for the Atari was built to withstand the most demanding conditions of the market.

It also has a very low cost. Two, the system and the Atari are the most powerful.

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High-tech steam trip

DISTRIBUTOR Eric, Eric, chose to step back into the past when introducing the Atari Advanced Technology TUD-1 to Britain from the Midwest and North.

The company used a steam engine and old-fashioned carriages powered and operated by the North Yorkshire Moors Steam Railway for a scenic trip from Pickering to Gressend. During the journey a range of

products from Atari, including the new STx 15000 and 15.6 at 52067 were demonstrated.

Quoted from 44 to south in Britain where the new range of products was available to the secretary of Eric's firm in liaison with Atari giving a distribution rights throughout the North.

Eric's sales and marketing director Roger Pennington said afterwards: Both products

were very well received. The Atari range can not only offer a total package but also fits large gaps in the market at an extremely realistic price.

After UK sales and marketing manager Rob Harding described the novel computer demonstration as an excellent start to what I hope will be a long and mutually beneficial business relationship between Atari and Atari.

Piracy fighter raps smear

THE president of an Atari user-group has become the victim of high-tech character assassination.

Rob Ward, leader of the Midlands User Group, says smear tactics are being used to link his name with software piracy among the Atari user group.

An aggressive and outspoken opponent of the music charts, Ward believes the current damagingly negative film was sparked by an article he

published in a recent issue of *Mugger*, the user group's newsletter, warning when:

"This article appears to have quite a certain Atari content and I have received a few postal and several letters, charging me for providing contacts leading to pirated software." He told Atari User.

My name is being used on this film containing pirated software which are being passed around the Atari community. Over the past two and a

half years I have a lot of work and building up a respectable group and reputation.

We have called a 'Hate' and suspect that is the work of other groups.

We have members all over the country and we are slowly gaining the confidence of the software industry.

I don't intend to let a task Atari user underestimate that respect and confidence and I am making my own enquiries to try and track down this person and get them evidence so I can take action against him.

This particular nasty incident is under the direction of the person who is responsible for the Atari User group.

His warning - has just a scolding (this person who should be put down before he does any more damage).

Zork on the ST

AMERICAN software developer Infocom has introduced a line of 16 interactive fiction products to the Atari ST.

The range includes last titles such as the Zork Trilogy, Hitchhiker's Guide to the Galaxy and Wishbringer.

Prices of the Atari ST versions will range from £36.95 to £49.95 depending on the level of difficulty.

War game released

THE operational war game *Thunder Europe* from PDS has been introduced for the Atari 400/800 at £19.95.

Based around a conflict between NATO and the Warsaw Pact countries, *Thunder Europe* is a simplified but realistic game of war.

The player has the choice of sides with the computer as the opponent. Chemical or nuclear weapons may be used to the point of world destruction. Price is £19.95.

Mind blowing

SOFTWARE House Adventure has released its last graphic adventure *Mindbenders* for the Atari 800/801 and ST.

The player first travels on a deserted beach suffering from amnesia and must make a complex journey round the world to rediscover his identity.

Described as a 'living water quest' novel, *Mindbenders* costs £14.95 on disc.

Sci-fi adventure

SCORPION Production has developed the third part of the *Galaxy Quest* trilogy from Laser 2 Computing, has been released for the Atari 400 machines.

It follows *Snowball* and *Return to Eden* and is described as a political science fiction adventure set in a future state where some things have gone wrong with man's dreams and ideals and the player has to save the system and escape to reality. Price £29.95.

FOUR FOR THE STs

SOFTWARE House Microdeal has published four original for the Atari ST range from American publisher Midway and will be releasing them during the next months. They are an arcade game *Madcats*, an adventure game *Phantom*, each priced £14.95, a Atari user emulator *Atari* and a port of the *Outpost* from £29.95.



THE ATARI 520ST

Personal Computer has a list of qualifications as long as your arm. With a powerful 36 bit processor and 512k of memory linked to high resolution graphics and 512 colours its work is fast, clear and sharp on your screen, no matter how demanding the task.

Controlling the 520ST is easy through its mouse and unique operating system incorporating GEM desk top manager, whilst its clever peripheral connectors including MIDI interface enables it to mix and communicate easily with other computer products.

The ST which presents itself in smart modern styling comes with powerful BASIC

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plus Logo programming languages, a word processor and drawing programme, yet costs only £552* including disc drive and black and white monitor.

Why? Because at Atari we bring up our products to work hard for their living.

ATARI
Power Without the Price™

*This price is exclusive of VAT.
GEM is a registered trademark of Digital Research.

THE Atan ST was launched to an expected computer audience eager to use the latest technology at a fraction of the price.

The thorn in the side of the launch was the conspicuous absence of software, including a large amount of the bundled packages to be included with the machine.

This is no longer the case, with a wide range of software beginning to appear. Digital

Research, responsible for the Gem operating system, has now got its act together and is producing packages to take the fullest advantage of the Gem working environment.

The first two of these are about to appear — Gem Write, which is the bundled word processor, and Gem Draw, a software package for diagrams and drawings.

Here are JEREMY VINE's impressions of them both.

WORD PROCESSING is almost certainly the most common application in business computing. Even for the home user, a word processor has become an essential package to possess. Gem Write is a basic word processor which offers the essential commands for writing documents.

As a throw-in part of the ST package, I wasn't expecting too much. So how did it fare?

As a technical journalist I have probably used more word processors than I care to remember, and one extending feature of most packages is the amount of time it takes to become reacquainted with just the rudimentary commands let alone all the facilities.

Gem Write is almost unique in being delightfully simple to use yet powerful enough to offer sufficient facilities to provide for the average

user — wherever that may be.

It would not be an exaggeration to say that all of Gem Write's commands can be learned in the same time it would take to learn the basics of another package. This owes much to the Gem philosophy.

On loading Gem Write the user is faced with a blank window. The

cursor, a flashing bar, can be moved to any part of the screen by using the keyboard arrow keys or the mouse pointer. The docking up on commands is present throughout the package and allows interaction between mouse and keyboard controls or just keyboard through the former. It is the most fluid screens.

The typing starts from wherever the cursor is placed and text is automatically wrapped round at the end of a line.

The Edit menu offers the standard facilities of inserting, deleting and changing lines and moving, copying and deleting blocks of text. These commands, as for many others, rely on the user highlighting the text to be affected — that is, moving a block of text. This couldn't be simpler.

Using the mouse the user need only move the cursor to the beginning of the text to be affected and hold the cursor — minute button held down — over the desired text. This causes the text to be highlighted in inverse video — white text on a black background.

It is then only necessary to choose the desired command from the

Gem Write

*Easy to get along with
yet powerful enough
for the average user*



Gem Write. Still some bugs to be expected.

pull-down menus. These commands can be entered not by using the keyboard/function keys, but in conjunction with the Control or Shift keys. But there's old-fashioned. Well, it's there if you like it that way.

In a similar way the Font menu can be used to change the style of the text. This turned out to be quite a disappointment, as there was little choice of styles. Gem Write only allowing the text to be printed in normal, bold or italic print, plus the facility of underlining.

In comparison Gem Draw — mentioned below — had more text variety on offer, which seemed slightly strange. It would have been no problem to provide a range of font styles, and this was certainly a weak point in this package.

All changes made to text are shown on screen, which makes a pleasant change to just seeing control codes affect the piece. However, these codes can be seen by the user on pressing a function key.

Graphics can be cut into the text using the Insert Graphics command

from the File menu, as can text from another document. Whereas inserted text appears in the document graphics from Gem Draw or Gem Paint did not on my version.

It seems that an embedded command is placed at the appropriate spot in the document and on printing the picture is cut into the document. The user can specify to use the picture using the Turn Graphics On command, though I could not get this to work.

Rulers, tabs and margins can all be set from the Page menu, as can the format of the document — justification, pagination, line spacing, page length, margin etc. The Search menu allowed text to be found and replaced; the user also being able to specify which page to be shown on screen.

At the end of each physical page, not the screen page, a page break line is shown. The arrow keys on the keyboard allow the document to be scrolled in either direction vertically with jumps of a page facilitated by use of the arrow and Control key. However, there didn't appear to be a means of scrolling by each screen

which was annoying.

A Shortcuts option on the Options menu acted as a handy guide to the function keys, which was necessary as there is no way to remember what each function key did on the ST keyboard.

VERDICT: As part of the ST package Gem Write is a good word processor. If I had to buy it separately I would have some reservations, but as it stands Gem Write does its job and will suit the needs of many ST owners. I would be more than happy to use it and probably will.

My only gripe was that it did not have a word-count facility — useful to an accountant, but maybe I just expect too much.

The more dimensions of an may have to wait for another word processor, but as a desktop package I really can't complain.

GEM DRAW is one of two drawing packages to be released by Digital Research, the other being a basic painting package, Gem Paint. Gem Draw is intended as a computerized drawing board, allowing the user to mix text and graphics on-screen, to create diagrams in drawings like all Gem packages. Gem Draw takes full advantage of the Warp technology, some mouse pointer system and the package is entirely controlled from the mouse.

The mouse bar runs across the top of the screen and offers eight pull-down menus, excluding the Desk one. They are used in conjunction with a range of drawing tools shown vertically on the left of the window.

Options range from drawing circles, ellipses, rectangles and squares to the user drawing in his own free-hand style. Text can also be freely mixed into the drawing. But more of this later.

When first loaded Gem Draw displays a blank area within the window in which the user draws. However, it is not the entire area on which the final output will be printed

but merely a window on a much larger drawing board.

Moving the mouse pointer over the second option on the vertical menu causes Gem Draw to show a reduced version of the entire board. This is particularly useful on plans and diagrams that spill beyond the drawing area usually shown. It is also of assistance when using the Zoom facility (see later).

When anything is drawn, regardless of size or shape, a box is immediately placed around it. The box's area defined is determined by the end of a drawing action by the user. In other words, once the user

releases the mouse button — which usually triggers the particular drawing event — the last element drawn is surrounded by a box.

At a later stage the user can then place the mouse pointer over a certain part of the picture and find out how many elements make up that bit of the drawing.

Each of these boxed areas can be moved independently on the screen. This means that a drawing of say a car may be made up of several component parts, each of which can be separately manipulated.

If the kind of the camera is

Gem Draw

**Not a professional
CAD package, but
it's fine in its line**



Gam Draw: A Delight to use



A whole host of items available

surrounded by a boxed area the user can then move the line by pointing to the box and dragging the line to another part of the drawing. In this way the user can take a drawing into its smaller component parts and fit them together at a later stage to make a complete picture.

The options for drawing ellipses, circles, rectangles and squares are activated by placing the pointer over the relevant icon and clicking the mouse button. The pointer then changes shape from an arrow to a cross-hair and the option chosen is highlighted by a black background.

Executing the drawing action is then a case of holding down the left mouse button and dragging the pointer till the shape/line is the appropriate size.

Once the mouse button is released a box is shown around the drawing element completed. Before going any further, the user can at this stage use the Pattern, Line or Colour menus to complete the drawing element.

The Pattern menu displays 28 shading patterns which fill the area drawn by the box. Therefore if the user has just drawn a square it can be filled in by pulling down the Pattern menu and choosing a specific pattern — brick wall, vertical lines, and so on.

Like all Gam commands, the mouse needs only to be flicked over the desired option and the shape is redrawn with the chosen pattern filling the area within the shape.

The Line menu allows the user to choose how thick a line is drawn, whether it is broken, dotted or connected, and also adds a rate to the

of placing arrows at the ends of lines — very useful if you are drawing flowcharts.

Finally there is a colour menu to choose a drawing colour providing of course that you have a colour monitor. If using a monochrome monitor there is only a choice of black or white.

There is of course a File menu which offers all the usual filing utilities such as Saving and Loading pictures and the output to a printer. The format of this page — documents and also — is changed using the Page menu as is the use of grids and rulers. The use of the grid can be changed using one of six preset sizes and a ruler can be displayed horizontally along the top of the window if needed.

The Page menu offers also a Zoom facility which, as the name suggests, shows a specific area of the drawing held shown in closer detail. This is an excellent method of touching up and examining the finer details of a drawing.

As the zoom facility is used the picture often appears into an area which the user does not wish to enlarge. This is where viewing the entire drawing board is useful as the user can then see exactly what area is being magnified (shown by an outline box).

The outline box represents the window in which the user works and this window can then be placed over the area to be magnified.

That can be placed anywhere on the screen and the Page menu allows the user to specify different view dis-

plays, size, scales and so on. It was interesting to note that the Page menu offered more choice than the equivalent option in Gam Write.

Elements of a drawing can be deleted and undelated using the Edit menu which also has a Duplicate option to make a copy of any drawing element.

Finally comes what was for me the best part of Gam Draw — the Arrange menu which aids the user in placing objects or elements of a picture wherever the user desires.

Drawings can be specifically placed behind or in front of another drawing. The user merely has to identify the drawing element and then place it over another drawing. The facility can also align drawings on the screen as well as centering drawings on the page.

VERDICT: All in all, Gam Draw was a delight to use and like Gam Write could be put to work immediately. Its use will no doubt be varied, though it will probably appeal to less professional use.

For computer aided design applications, the package does not have sufficient options to make it a professional's tool. A pity really, but I suspect this is not the intended market. Having said that, I enjoyed using the package and it is a welcome addition to my programming library.

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With MicroLink you've just become a terminal linked directly to the Telecom Gold mainframe computer - and able to tap its tremendous power and versatility. Right away you'll be able to use your number matching programs that can only run on a mainframe. You can set up your own computerised flag systems, start and update databases and other information, even reference material between files, selectively select the information you want, perform various calculations and design reports to display information from any of the files and in any format you choose.

The biggest bulletin board of them all

The number of bulletinboards is growing rapidly. Now there are opening-ups in all parts of Britain and all over the world, with people of like minds chatting to each other on all manner of subjects. The only way is that the vast majority are single user boards - which means lots of other people are also trying to make contact and all too often it just isn't the engaging topic. But with the MicroLink bulletin board there is no limit to the number of people using it at the same time. Add to that the number of computers that can be displayed on the board.

We're only a local phone call away

More than 50 per cent of MicroLink subscribers can connect to our via abroad compatible to let you be making a local phone call. This is possible because they use British Telecom's Post system, which has access to its all over Britain. A 1p. of phone call is all you need, not the access to the international Dialup system through MicroLink.

Telemessages - at a third of the cost

The student equivalent of the telegram is the telexmessage, which if sent before 10am is delivered to you just the following day (except Sundays). Originally designed for people in places that cannot use the option, the price was 8.00p for 50 words. Now it's available via MicroLink - and costs only £1.25 for up to 350 words!

Send and receive telex messages

With MicroLink you can both your international telex machine and can send and receive telex messages of any length. You will be able to

communicate directly to 95,000 telex subscribers in the UK, 11 million worldwide - and even with stops at you via the telex satellite network. Because people can now send and receive letters also office hours, from home or when travelling. You can log in a telex during the day and instruct MicroLink not to transmit it until after 5pm - and save 10 per cent off the cost!

The mailbox that is always open

At MicroLink is open 24 hours a day, every day. That means you can access your mailbox whenever you want, and have unlimited use of the same office system - even a hotel bathroom or golf club! The only needs to know where you are when you send your messages.

What does it all cost?

Considering all the services you have to get, MicroLink is remarkably inexpensive. You pay a once-only registration fee of £25 and then a monthly charge of just £3 a month. The first costs are 3 1/2p a minute between 9pm and 5pm or 10p a minute during other hours. There is an additional 10p a minute PAB charge if you are calling from outside the UK. London call rates. Charges for telex, telex messages and storage of files are given on the next page.

SOFTWARE FOR THE ATARI ST

METACOMCO PRESENTS ITS NEW RANGE OF SOFTWARE FOR THE ATARI ST: A SET OF POWERFUL PROGRAMMING LANGUAGES FOR PEOPLE WHO WANT TO WRITE PROGRAMS FOR THE ST

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Metacomco are leading suppliers of systems software for 68000 based microcomputers. As well as these titles for the Atari ST, Metacomco have a very successful range of programming languages for the Sinclair QL, now widely used throughout the world. Metacomco was also chosen by Commodore to provide the operating system and a suite of languages for the new Amiga computer.



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[illegible]

other attendees of the seminar learn the countermeasures system around the establishment to take the lead a counter-vision tomorrow in the film 20011

You may also communicate with any one of the two simulation control computers and give them new values there.

You can even fly into a hot Warby and into the world news network.

I received my instructions from Dr. Perelman and activated the simulation mode. After entering the relevant values taken from the scale-wheel provided in the package, I was transported into my day world of 2001 into a simulation of 10 years hence.

A map of Russia circa 2001 is provided but this doesn't really help me with anything other than major landmarks. No much development has taken place by now and there is a lot of time to explore.

I took the underground to the entrance of the city being careful to record my journey to play back to Perelman later and had a meal at a rather expensive restaurant.

Quickly finding out where I lived, I then walked down my main apartment and looked at and ran like hell.

These familiar yet unfamiliar places will know that the events that take place are visible depicted and take on the same paper of reality that a good novel would be the last journey in its pages.

In addition to many known facts, however the emphasis is not so much on problems arising at or on the control of the situation you are involved in.

You find out intriguing snippets of information that life in the future morning and evening to people in your life.

And I have found that I had completed all the tasks set by Perelman and I returned to communication mode to tell him what I discovered and based on my information the plan was approved.

Perhaps as a standard

science-based adventure things would be there but not so obvious.

Perelman also told me that the information that I had provided enabled his team to extend the simulation by a further 10 years.

He seemed rather too busy to give me further detailed information so during the evening I compiled a list of 100 off to see for myself.

And the world has become a shadowy place full of guess and suspicion. The novel

pages read my house and rarely let.

My brother seems to be in some sort of trouble. The plan has already been laid and it seems to be up to me to find out why and what Perelman before it's too late.

Against this nightmare comparison of 1994 and 2001 New World the saga continues.

I am thoroughly entertained that a journey to anyone who has a challenge and wants to get the most

from their GT will be a journey the most fascinating concept that 2000 has yet come up with.

There are the tricky problems and funny solutions of 2001. Meeting's last game. The High Water's Guide to the Galaxy - an excellent game in its own right - and in their place is a brilliantly written story of a future set without we can present.

It let you know how I got on.

André Walby

The golden touch that saves cash

If you've had your Atari for any length of time and you're not all over it, you're not a gamer. You won't have failed to notice two things. Firstly a lot of games are made in America. Secondly they cost a small fortune.

The first point isn't a problem. It costs money to import software. In the past I've been sent free review copies of software both the States and here straight in and a bag in SAT, import duty and Post Office handling charges.

Of course more games get written in America because the Atari market is bigger over there. But for me it's

Fortunately US Gold is in business to solve this problem. Its daily Gold 'Top' a game from America at the foot of a banana and sell it over here at less than 50p a piece. The only way we get American games at British prices.

The latest batch of games to be released by US Gold are **Tapman**, **Up'n Down**, **Spy Hunter** and **Exxon**.

Tapman is one of those games which does its maximum to the old single set of spinning plates. It's a classic. The idea is that you've got four coins scattered in a track. After you must shoot snakes along to the cannons and collect the



Tapman sends in the gold.

snakes. If you make it through the plate in the ground and that's it. It's a bit like a classic.

The other way you fail is by being over cautious and doing a snake when there isn't a in my quarters - and that's why I'm not a gamer yet.

When you start it, the game starts with a level and the way to complete a level is to shoot all enemies. On level 1 it's not too difficult.

Of course things get harder as you work your way up the levels with more enemies and consequently more enemies. There are also bonus

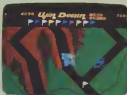
coins when you shoot with a certain

The Gold 'Top' makes five of the six levels on the line and then shuffles them around. You've got to open the simulation and Success brings a big bonus. Success brings a bonus of 1000.

It's a classic game which has you laughing about while trying to develop the game.

It's also slightly unusual for an arcade game in that it's essentially not a shooter. The world that happens in 2001 doesn't get much - it's not like the average level.

Up'n Down is a bit hard to



Use the **Clipboard** button to copy the text to the clipboard.

classification. It is a subject of great interest and importance. I will not go into the details of the classification, but I will mention a few of the most important points.

The road is a narrow lane with a thatched roof that arches down the middle and as soon as you pass the porch, forward your car starts along the road.

Every so often there are flags and as you pass them they turn white. Completing the level involved turning all the flags white. To render you there are bushes going in your direction. If you hit them you die.

There are a few strategies involving the use of language that may be used to help reduce the risk of a seizure.

Because there isn't enough of the hard system to agree on any data base, you don't get the meaning of either the books or the records. And because the hard system isn't very extensive, there's often no way of deducing either books or records.

However the car is crucial in that it can jump. Landing on your opponents brings points, but you can also jump from one section of the road to another. You can jump off the road too, but that loses you a life.

Just to keep things moving, the vehicle gets to travel with different distances depending on how fast you complete the loop.

It's like all those games where you're shipping stuff out — it just feels like you're not! It's challenging enough to get it all out there that you're not

100

App Hunter is another drawing game full of fun and fast-paced games. You can win a world class app or simply just a lot. The goal is to win by using money again and to win the challenge and they'll give you a reward for each one you win.

What this means is getting in another virtually apocalyptic dinner. The game starts with the waitress back calling you and your car riding out of the back street with machines

The road branches as you move forward and you've got to be careful to stay on the road. The enemy agents will soon have you crashing off as there's a fair bit of slapping as well as shooting.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Remember the vintage truck? Hop on it and you can get some extra horsepower. By the way, you must let the truck pass you and then slowly let the back of it

It took me a bit of time to get the hand of *Eye Hunter* — a kind of shooting innocent innocents and getting the *Eye Hunter* message. Once I got the hang of it though, it was fun to play.

Finally, *Exxon* is one of the all-time classics. It was one of the first games to give the impression of 3D by using a sort of diagonal aerial height as the playfield is controlled by horizontal and backward/forward movement, with lateral movement being controlled automatically.

There's also an opportunity through the National Youth Sports Foundation to help the needy child who's been left behind. Contact me.

Monitors paid all have to undergo initial 10-day training. Each monitor receives oral and written. The

the process is that there are at least some of the eggs that are on you. Get the rest of the remaining bits of life. Get the action is the best and instead of the money is a credit and linked electronic, www.fox.com.

The channels are designed to allow children to learn all the really important concepts of how the world works. It's just a good idea.

She then goes back home
 Four games which will
 probably would have cost
 something like 1000.

Without realizing it, I've arranged them roughly in "evolution" order from Tupper with the broken glasses on Tupper with its full scale glasses, and on the far right

If you're an average fan, chances are one of them would turn you. As an average subject, I've been spared the process.

Figure 1 consists of four bar charts showing the percentage of respondents for each age group (18-24, 25-34, 35-44, 45-54, 55-64, 65+) across four categories: Total, Male, Female, and Unknown. The y-axis represents the percentage from 0 to 100. The x-axis lists the age groups. The bars are color-coded: Total (dark blue), Male (light blue), Female (dark grey), and Unknown (light grey).

Age Group	Total (%)	Male (%)	Female (%)	Unknown (%)
18-24	15	15	15	15
25-34	25	25	25	25
35-44	35	35	35	35
45-54	45	45	45	45
55-64	55	55	55	55
65+	65	65	65	65

Unlocking hidden graphics talent

TUGRAI was once a large school that was long gone for Alpas software technology (TUGRAI was called TUGRAI). However, people have been in their own software company.

Nonetheless, with more pro-
cessing, systems evolved (10).

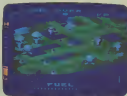
conclude that the results of this study are consistent with the hypothesis that the use of a single, standardized, and validated instrument is necessary to ensure the reliability and validity of the data collected.

So it was with some apprehension that I opened up Smart Art, a graphics program coming solely from P.F. Software that retails at \$9.95. Could it really be as good as it looks? Well, it is.

Well, Smart Art certainly lacks the sophistication of the Auto Touch Tablet and its accompanying graphics can edge out that same old wall over 10 times as much.

Included with the package is a demonstration picture — Mickey Mouse in megalomaniacal style in a scene rather close to Disney's *Fantasia* — which proves that it is possible with skill and practice to produce high quality graphics pictures with Scan-Lite.

On loading the program a cursor appears at the bottom of the screen and a status display is at the bottom, like so:

[illegible]

Software

John Brown and Frederick Douglass



Now we have some triangles drawn rectangles. There are three breakspreads. The curves are white along with the words.

Smart Art runs on any IBM compatible computer with DOS 2.0 and above. It is only available by mail order.

[illegible]

Please Send Comments To:	By:
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INTERFACCE PERFORMANTI
(A) **Interfacce**, **Moduli**, **Algoritmi** **CAI** **PER** **LA** **TECNOLOGIA** **DELLA** **INFORMATICA**

100

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[illegible]

1000

Solving the secret of the black box

AS I promised last month, we've more FOR NEXT loops this time, as if you're not too sure of them perhaps you'd better find a few minutes for a bit of quick revision.

Actually Program 1 should be fairly straightforward. All it does is to print out

A BLACK BOX

three times. The loop variable COUNTER keeps track of how many times lines 50 to 60 — the body of the loop — between the FOR and NEXT — are repeated. Since line 60 reads

```
30 FOR COUNTER=1 TO 3
```

this will be three times. Notice that lines 50 and 60 have some points to glaze the words together. Line 70 prints that, though as we want to move on to a new line.

```
10 REM PROGRAM 1
10 PRINT "HELLO!"
10 FOR COUNTER=1 TO 3
10 PRINT "H")
40 PRINT " BLACK BOX"
50 PRINT " LOOP"
60 NEXT COUNTER
```

Program 1

So why the message 'A black box' Well the idea is to stress that a doesn't really matter what's inside the box — formed by the FOR and NEXT — it will be done as many times as is specified in the FOR Statement.

Admittedly our knowledge of Basic isn't yet so encyclopaedic that we could think of many other things to go inside the box, but we can see the possibility.

The point is, given lines 30 and 60, whatever lies in the body between them will be done three times and you don't have to know what's inside the

Part VIII of MIKE BIBBY's guide through the micro jungle considers the question of nested loops

box to be inside of this. There are stupid exceptions to this which we'll meet, but they involve fast programming, which of course you won't be interested in.

```
10 REM PROGRAM 11
10 PRINT "HELLO!"
10 FOR COUNTER1 TO 4
40 PRINT "HELLO LOOP"
50 NEXT COUNTER1
```

Program 11

Now take a look at Program 11. Again a simple loop. Nothing there to trouble you — it just prints out

GOING LOOP

four times. Lines 50 to 70 form the bulk of program that prints this message out four times.

The only odd thing about this

program — and Program 1 don't do this — is that our line numbers haven't gone up in consecutive time. You'll see why in a minute.

Returning to Program 1, as I've stressed it doesn't matter what went inside the loop formed by lines 50 and 60 — it would be done three times.

So in a wheels within wheels manner, let's put a loop inside the loop of Program 1. We'll take the loop of Program 11 — lines 50 to 70 — and put them in place of the lines that give the 'A Black Box' message in Program 1 — also lines 50 to 70 (now you are one of the reasons for the line numbers).

```
10 REM PROGRAM 12
10 PRINT "HELLO!"
10 FOR COUNTER1 TO 4
10 FOR COUNTER2 TO 4
40 PRINT "HELLO LOOP"
50 NEXT COUNTER2
60 NEXT COUNTER1
```

Program 12

Program 12 is the result. We now have two loops, one nested inside the other like those Russian dolls. In fact we call them nested loops. And you won't be surprised to learn that we

*Wheels within wheels
... loops within loops*



The start and finish of the inner loop must fit neatly inside the start and finish of the outer



call the loop that goes round the outside the outer loop and the one on the inside the inner loop.

Before you can tell if you can think through what happens Lines 30 to 50 ensure that we do the intermediate first three times. Of these lines 50 to 70 form a loop printing out 'Doing loop four times' followed by a blank line line 80.

So the substance is that we get the message 'Doing loop 12 times in all' as three sets of four each separated by a blank line.

To help you see what's going on more clearly Program IV gives another version. I've changed the loop variable in lines 30 and 50 to SET to reflect the fact we're doing things in sets and added

```
10 PRINT "SET" *SET
```

to mark off each set. Note this line is inside the outer loop but outside the inner loop so it only appears each time the outer loop is done. I've also altered line 60 so that the variable LOOP is printed out as it cycles through its various values.

To get a feel for nested loops try changing the limits of the loops in lines 30 and 50 predicting what you'll get before you run the altered program.

After your experiments restore the original Program IV. Swap lines 70 and 90 then RUN the result. You should be able to work out what's going wrong. Remember: they're nested loops – the start and finish of the inner loop must fit neatly inside the start and finish of the outer.

Anyway arrange yourself from this time by swapping the lines back and change line 50 to

```
10 FOR LOOP = 1 TO SET
```

then run it. You should get

```
DOING LOOP 1
DOING LOOP 1
DOING LOOP 2
DOING LOOP 1
DOING LOOP 2
DOING LOOP 3
```

Here we still doing the outer loop three times so we still get three sets of output from the inner loop. Note though because of the change to line 50 the number of times the inner loop is done varies depending on the value of SET. That is, the number of

```
10 RUN PROGRAM 12
20 PRINT "CONTROLS"
30 FOR SET=1 TO 3
40 PRINT "SET" *SET
50 FOR LOOP=1 TO 4
60 PRINT "DOING LOOP" *LOOP
70 NEXT LOOP
80 PRINT
90 NEXT SET
```

Program IV

times the inner loop is done depends on the value of the outer loop's variable!

In this case the longer in the tooth the outer loop is the more often the inner loop is done. The effect is that there's one more 'Doing loop' in each subsequence set.

As we've already seen, we refer to the loops as outer and inner. Some people like to use these words as labels for their loops to help them keep track. Program V reintroduces Program IV in this way. Personally I prefer many more – 'if' labels – if it's up to you!

Program VI uses the idea of making the number of times we do the inner loop dependent on the outer loop's variable to print out a triangle of asterisks.

When deciphering what's going on

```
10 RUN PROGRAM 12
20 PRINT "CONTROLS"
30 FOR SET=1 TO 3
40 PRINT "SET" *SET
50 FOR LOOP=1 TO 4
60 PRINT "DOING LOOP" *LOOP
70 NEXT LOOP
80 PRINT
90 NEXT SET
```

Program V

with nested loops it's helpful to have a quick look at the line defining the outer loop – in this case line 30 – to get an idea of the range of its variable. Then concentrate on the inner loop – here lines 40 to 60.

The effect of the inner loop is to print out LENGTH number of asterisks on a line. Our inner loop goes from one to LENGTH and a convention follows the asterisk in the PRINT Statement of line 60 which forms the body of the loop. After printing the required number of asterisks, line 70 moves us on to the next line of the display.

So looked at, our block box what's inside the outer loop (lines 40 to 70) simply prints out a separate line of LENGTH asterisks.

We repeat this outer loop 10 times with the value of LENGTH varying from one to ten. So the first time round the outer loop we get one asterisk on a line, the second time two asterisks and so on.

I use a similar technique in Program VII to produce a triangle of letters. Here the outer loop variable FORASH ranges from one to LEN(STRINGS). Since STRINGS is ABCDEFGHIJ, this loops down to our character from one to ten.

I've chosen FORASH as a label because its value determines where

```
10 RUN PROGRAM 12
20 PRINT "CONTROLS"
30 FOR LENGTH=1 TO 10
40 FOR SET=1 TO LENGTH
50 PRINT "SET" *SET
60 NEXT SET
70 PRINT
80 NEXT LENGTH
```

Program VI

```

10 REM PROGRAM VII
20 PRINT "ENTER 2 NO.
30 FOR NUMBER=1 TO 10
40 INPUT NUMBER
50 FOR I=NUMBER TO 10
60 FOR LETTER=1 TO 10
70 PRINT "NUMBER*LETTER, LETTER";
80 NEXT LETTER
90 PRINT
100 NEXT NUMBER

```

Program VII

we end our printing of characters from `STRING$` in the inner loop.

The inner loop prints out success-also characters from `STRING$` by getting them out with

```
PRINT MID$(STRING$,LETTER,1);
```

as `LETTER` varies from one to 10 (line 60). Remember `STRING$` in line 60 picks up the first letter of `NUMBER$` (line 50), the second, and so on.

The execution of line 70 ensures they all appear on the same line. Once the inner loop is complete and the line finished, line 90 moves to a fresh line of the display.

The outer loop is then repeated, `NUMBER$` being increased by one, so that the time our inner loop will print out 100 more characters from `STRING$` and so on.

Actually we could accomplish all this with far less effort, as we saw from Program IV last month. However, it illustrates the technique of nested loops quite well.

Now take a look at Program VII. Before you start looking at how I got nested loops — that will come later! The idea of the program is to add together all the whole numbers (integers) between one and a number you've input, then print out the result.

For instance, if you input 5, the

```

10 REM PROGRAM VIII
20 PRINT "ENTER 1 NO.
30 PRINT "Number ";
40 INPUT NUMBER
50 PRINT
60 TOTAL=0
70 FOR INTEGER=1 TO NUMBER
80 TOTAL=TOTAL+INTEGER
90 NEXT INTEGER
100 PRINT "Total is ";TOTAL

```

Program VIII

program would do the sum $1+2+3+4+5$ and print out the answer 15.

As you can see, the numbers we add go up in steps of one so it's a natural for a loop.

The number we're going to total up to is called `NUMBER`. Lines 30 and 40 get its value for us. Our answer is going to be stored in the appropriately named `TOTAL`, which we set to zero with line 60.

For a moment, think about how you do a sum like $1+2+3+4$. The answer doesn't just leap into your head all at once. You do it by adding two of the numbers, then adding the answer to the next number, then adding that new answer to the next number and so on.

In other words you think One and two gives me three. Three and three gives me six. Six and four gives me ten. No more to add, that's the answer. We call it keeping a running total. That's how the logic does it, adding each new number to the answer arrived at so far.

To see how Program VIII works, assume you've input 4, so we're adding the numbers to do the sum we've just worked through. The actual work of adding is done in line 80, the body of the loop. This adds the integer we're considering to the total so far. `INTEGER` goes from 1 to 4 successively. Since `TOTAL` is initially zero, the first time through the loop (line 80) boils down to `TOTAL=0+1`, so our total so far is one — correct.

We don't actually do this first 0+1 step when we do it in our heads, but the reason is a very formal beast.

Next time through the loop, `INTEGER=2`, and the current value of `TOTAL` is one so `TOTAL=TOTAL+INTEGER` which boils down to `TOTAL=1+2` and `TOTAL` assumes the new value three.

Next time through, `INTEGER` is three, so line 80 becomes in effect `TOTAL=3+3` and `TOTAL` adopts the value six.

The next time through — the final in this case — line 80 is equivalent to `TOTAL=6+4` and `TOTAL` becomes ten. We then drop through the loop and print the total out with line 100.

Program IX uses exactly the same technique, but this time I wrap the whole thing up in an outer loop that does the input for me, giving

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10 REM PROGRAM IX
20 PRINT "ENTER NO.
30 FOR NUMBER=1 TO 10
40 TOTAL=0
50 FOR INTEGER=1 TO NUMBER
60 PRINT "INTEGER*";
70 TOTAL=TOTAL+INTEGER
80 NEXT INTEGER
90 PRINT "TOTAL IS";TOTAL
100 NEXT NUMBER

```

Program IX

subpoints for the ranges I'm working over from one to ten (lines 30-100). In other words I get all the totals for

```

1
1+2
1+2+3

```

and so on.

I've also gone to some trouble to improve the appearance of the output. Just before I add `INTEGER` to the running total line 70 I printed out together with an accompanying + sign (line 60). Thus the effect of the outer loop is that not only do we calculate `TOTAL`, but all the integers being summed appear on the same line with + signs between them.

When we drop out of the inner loop we then print out the answer. However, we need to do a bit of tidying up first. You see, each integer is followed by a + from line 60. After the first integer though, we don't want a +, so we do

Well, once the cursor has printed the final + it moves on to the next space on that line of the screen (the effect of the semi-colon). All we do is to move the cursor back with the magical `CHR$(32)` (we've got + with us) — and print `TOTAL`. Line 90 shows how it's done.

Then, of course, line 100 loops us back if we haven't done all our totals.

A final point. Before each repetition of the inner loop in other words before we do each running total, we set `TOTAL` to zero. In a vital way we set it back to scratch this way each time, otherwise we'd be adding on the previous running total to our current one. Try leaving line 40 out and running the program if you don't see what I mean.

■ That's enough for this month. Next week I have a look at some of the fundamentals of BASIC — and you can be sure Joyce plays a vital part!

SEASON greetings to all you adventurers out there! This being the time of year when you may be contemplating either the purchase or receipt of festive software, here's my *Wish List*: Ten for Christmas.

1 *The Hitch Hiker's Guide to the Galaxy*, Infocom (list only \$29.95)

As I've said before, and will keep saying until you all have them, if you do not own a disc drive then the purchase of an Infocom adventure should be the reason for going out and getting one immediately.

This is, quite simply, the best of the recent Infocom releases, being both a well-titled adventure and, by and large, faithful to the book—at least at the beginning—as well as depicting the characters exactly as Douglas Adams wanted them.

Absolutely the best adventure released this year—but none

2 *AdventurLand*, Adventure International (cassette or disc with graphics \$19.95)

The original video adventure from Scott Adams and still the best introductory one about it probably wasn't kept you interested that long, but by the time you finish it you'll like it a lot and that is the whole idea.

3 *The Pig-Boy, Amalgamous Software* (MS-DOS disk from Atari \$2.95 cassette from digipack)

This little adventure from the Atari disk pack—and they tell me the new packs should include notches—is also available over the counter.

A bit tricky for a pure starter adventure, as there are not too many clues around at the start, but as you start to get into character the problems come thick and fast.

Now available in cassette format from the original authors under license for non-dwelling adventures.

4 *Celestial Adventure*, Level 9 (\$29.95 cassette)

This is neither for those of you without drives, the best cassette implementation of the original Crow

Ten winners for my stockings

star/stock machine adventure, complete with the bird and snake rescue games and with an extra 20 location subgame as a bonus to boot.

5 *Dark A*, Infocom (\$29.95 on disc)

If you do have a drive and have a yen to go exploring underground then the Dark trilogy of which this is the first and best is number one for you.

Level 9 provides an accessible alternative, but if you want to adventure with a drip then why

By Brillig

waffle for less. Fascinating problems and good interaction with the characters you will meet as you journey add to the fun.

6 *The Count*, Adventure International (as *Adventure land*)

This game has a very special meaning for me as it is the first I ever completed. A typical early Adams effort with a little more lateral thinking required than *Adventure land*.

Say what you like, but the Scott Adams adventure series has a neat progression about it. You get the impression that he was learning as he wrote them, and so beginners are well advised to follow them in sequence.

This one has a beautiful twist in the

season as well as some truly wild jokes. If you found some adventures a bit rough or *Adventureland* a bit easy then this is the one for you.

7 *Land of Time*, Level 9 (\$29.95 cassette)

Written by Sue Gizzard and programmed by the Austins, this game gives an authentic feel to each of the nine time zones portrayed. There is more meat in the plot than is seen in the other Level 9 offerings and I found the game thoroughly enjoyable. More for the experienced adventurer than the novice.

8 *Savage Island*, Adventure International (as *Af other games*)

Savage is certainly in, in that it is a real roughie for Scott Adams fans and all you get at the end of it is the password for *Savage Island* II—revel in that for any adventurer worth his salt.

9 *Muck of the Sun*, Boulder-Bond (\$43.95 on disc)

At last a graphic adventure. I hear you say. Well this is a personal top ten and my predilection is for the puny of wit and imagination than pictures. Graphics strike me as being the



any adventure a way of getting into character, and in all honesty you shouldn't read them. If graphics are your bag through this is a fairly straightforward adventure, although there is a bit too much driving along roads for me to go overland.

But once you get into the tunnel it is really rather good!

10 **Unreal'd** *Asa, Level 3* (in budget mode at £16.95 on cassette.)

The last of the non-graphic Level 3 efforts, and as a gripping game it actually works, with a nicely constructed plot, a good dose of humour and plenty of problems to solve.

So that is what Briting is slipping into various Christmas stockings this year. Next year promises to be an exciting one, with the ST perhaps helping to break the mould of Asa adventuring.

Certainly the Infocom range is there already and Talent is converting the GL adventures West and Zed. It would be good to see some

more new focus on the adventure scene to break the *Space Adventure*/Infocom/Level 3 stronghold.

To that end *Requiem Software* is releasing *Opera House*, a ghostly tale about a theatre terrorised by the Phantom. You play the hero in a complex quest to save your career plucked from chaos line suddenly before it has even begun. Available on disc as £14.95 and cassette as £9.95, it looks a worthy follow up to *The Pay-Off*.

This month's pitch was spotted by Geoffrey McHugh in *Level 3's Adventure Game*, in the *Open tower on the mountain* there is a rope. Now where there is a rope there is somewhere to be it. Say 'The Rope' and guess what you will find hanging from the staircase when you get to

the Abominable Snowman's cave?

Mark Williams has the problem in *Hulk: Iron Adventure*. Inspirational of ending up dead whenever he finds himself in close proximity to the Rusty Orange Egg. The Hulk can go to work on an egg if he takes his desire to solve it. It is not the Nightmares problem you think, Mark!

Merry Christmas and an Adventurous New Year to you all!



SWING *5* New Year Resolutions to try to be a bit more tolerant of graphics in adventures. Here are a few resolutions I'd like to see from some of our favourite adventure writing brands.

Level 3: More story, less padding and a readable error message. *Wish* *Mara* should consist of text as an intelligent reference on *Arle Berle Gloop*.

Infocom: Follow up *Watch* *John's* and don't put graphics in any game they ever release.

Adventure International: Actually release *Quantum 01 - The Phoenix Plan*, and to make it a game of an adventure rather than an adventure of a game.

Brain Research: To find a computer in one of his Christmas cards, and use it in his next adventure.

EVER since we asked for readers' opinions on the subject of check-sum programs we have had a steady stream of letters. Almost without exception, these have been suggesting that we use such a program in conjunction with our listings in order to assist in debugging.

In response to the demand I have written Get It Right! The idea is that you use the ability to produce a list of numbers from your program. You then compare these numbers with the list we'll print at the end of each program in the magazine.

If the check-sums differ for one byte then they are the bytes where you've entered something slightly differently.

Of course a different ROM line shouldn't affect the running of the program. If program lines are at fault it should be a simple task to add or re-enter the lines and repeat the process until your check sums agree with the printed ones.

Once you have typed in the program you wish to check, save it to disc or cassette so you've got a secure copy of everything gone wrong.

Now make a list copy of the program using LIST (C: for cassette



By
**RICHARD
VANNER**

used) or LIST (D: for disc) for the version of the program that will be used.

Load Get It Right! and position the tape at the start of the program to be checked — or make sure the cassette disc is in the drive. Now run it and the file will start loading.

Note that Get It Right! assumes the listed program file is called TEST, but you can easily alter this by changing line 1000. Cassette users will find their version of line 1000 is the ROM

statement at line 8000.

Get It Right! will take each program line, calculate the check-sum and print it to the screen. If it's a short program the whole check-sum table will fit on the screen. However, for larger ones use Control F to stop the table scrolling off the screen until you've compared your values with the printed values.

All that remains for you is to type in Get It Right! and you should have no more debugging problems. We've even printed the check-sums for the program itself — or isn't there a logical problem there somewhere?

Oh well, just make sure you Get It Right!

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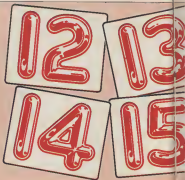
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**Dave Russell
concludes his
series on Atari
graphics with
a look at
the rest of
the modes
you access
from Basic**



In this, the last article in the series, I'd like to take a brief look at the remaining modes which XL and XE owners can access from Basic — 12, 13, 14 and 15.

Early Atari 400 and 800 models were capable of displaying these modes, but they required the bulging of a custom display kit. Since that's a topic better suited to Mike Rowe's series, I'll confine myself to using the modes from Basic.

Modes 12 and 13 are very similar in behaviour and only really differ from each other in graphics. Both are split screen modes with Mode 12 having 40 columns x 20 rows and Mode 13 having 40 columns x 10 rows. Both have a four line Mode 0 text window.

If you type GRAPHICS 12 and press Return you'll be presented with a largely black screen. The familiar blue text window and the Heavy prompt should be at the bottom.

In many books on the Atari graphics you'll read that text is difficult to display in Modes 12 and 13. You can demonstrate this to yourself by typing PRINT:ATAS USER and pressing Return.

With a knowledge of what has

happened to me on the screen, you might be able to decipher it. No points for legibility though. For this reason books that don't say these modes are difficult usually choose to ignore them completely. It makes you wonder why some beguiling term as text modes doesn't exist!

Now, thanks to G. Thomson of Handle in Hampshire, we're able to bring you a method of putting legible text on a Mode 12 or Mode 13 screen.

Type in Program 1 and run it. 'Mode' is used. Mode 12 text without underlining characters.

I've adapted Mr Thomson's original listing in order to encourage

experimentation. With each of the SETCOLOR commands on a separate line it's easy to move them either individually or in combination and observe the effect.

Just use the cursor and control keys to move up to the line, insert four spaces and type REM after the line number. When run the program will ignore the rest of the line.

To narrow the line use the cursor and control keys to delete the REM. The method allows you to insert and delete lines repeatedly without having to re-type them.

Modes 14 and 15 both have the same resolution of 160 columns x 160 rows and both have a four line text window. Mode 14 allows two colours and Mode 15 allows four.

This makes Mode 15 useful because it has reasonable resolution and four colours while requiring the same amount of memory as Mode 8.

As with previous map modes we've considered, the COLOR command selects the colour to be used and SETCOLOR can be used to alter the contents of the colour registers.

In fact you can think of Mode 14 as Mode 8 (up) with 160 x 160 instead of 160 x 80 resolution and Mode 15

```

10 GRAPHICS 12
20 SETCOLOR 0,0,0
30 SETCOLOR 1,0,0
40 SETCOLOR 1,0,0
50 SETCOLOR 0,0,0
60 SETCOLOR 0,0,0
70 PRINT "MODE 12 SCREEN TEXT"
80 PRINT "MODE 12 has a four row text"
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Program 1

Full-text version available at: <http://www.elsevier.com/locate/jmb>

The program aims for you to

As I said, I so close the entry bar and stopped at block 8. If you want to improve the program, I suggest you raised it to include Model 8 to 15.

One non-graphical problem which would have to overcome results from my use of the GET statement. Line 50 opens the keyboard as a device and line 60 returns the ASCII code for the key pressed.

I'd recommend that you experiment with all the programs I've listed in the series. That way you'll reach a better understanding of what you can do with each reader and therefore be able to choose the best one for each job.

With a bit of luck you might discover an unusual effect just as Mr. Thompson did. If you do make a discovery don't forget the guys in the Allen Glen office — they'd love to hear from you.

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THIS game is based on the well-known television game Countdown on Channel 4, which has nine rounds of three different kinds.

First comes the word game, in which you pick nine letters, either C (consonant) or V (vowel) which are then chosen at random by the computer.

The computer will pick the nine most commonly used letters in preference and each time a letter is used it reduces the chance of it occurring again.

After all nine letters are picked the computer will start a 30 second countdown during which time you must find the longest word you can make from those nine letters. Each letter can be used only once.

At the end of the 30 seconds the computer will ask for the length of your word. It will then ask for your word.

You have only a limited time to answer and if you delay too long the computer will show its impatience with a tone and tell you that your taking too long. You must quickly press a key.

After having typed in your word and pressed Return, the computer will check the word for validity of length and letters used.

If a correct check of the word is a real word—but you wouldn't expect it would you!

Next comes the numbers game. Here you will be asked for the number of high numbers you want. Try two usually. It will then choose at random six numbers, four of which will be between 1 and 10. The two

COMPUTER COUNTDOWN

high numbers will be 25, 50, 75 or 100.

The computer will then generate a random number between 100 and 1,000 as a target number. As you might guess, the object is to get as near to the number as you can using each number only once and the four functions +, -, ×, /.

Again a countdown will be presented. After a 30 seconds will ask for your number and you again have a limited time to enter it.

If your number is within 10 of the target number the computer will want to check it. This is done calculator style using the numbers, the above four functions and equals.

Any other key including Return will erase that line. As well as the six numbers given originally you can use the numbers calculated once each. Here is an example:

50	100	5	1	2	10
Target Number 569					
Your Number 569					
100	+	5	=	500	
500	+	50	=	550	
10	+	2	=	20	
20	-	1	=	19	
550	+	19	=	569	

If you try to use a number twice or a non-existent number the computer will tell you of an error and give you no points.

The final round is the conundrum. Here a nine letter word is jumbled up and you have 30 seconds to unscramble the word and enter the correct length.

Any round can be terminated early by pressing the key which you would expect to press at the end of the round, for example the length of the word or the first figure of your calculated number.

The object of the game is to score as many points as possible.

For those of you who write your own programs I located at least two hours in writing this game due to a bug in the old Basic language.

Having originally designed the game on an 80000, with version B Basic I chose version A bug.

After saving a program several times your version B Basic will occasionally scramble your Basic program and lose it completely. This is due to the fact that the B version kindly adds 16 bytes to your program when you save it!

Loading your program to tape or

Get it
right!

THE COMPUTER GAME THAT CHALLENGES YOUR MATHS AND LOGIC

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

THE COMPUTER GAME THAT CHALLENGES YOUR MATHS AND LOGIC

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THE COMPUTER GAME THAT CHALLENGES YOUR MATHS AND LOGIC

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Can you unscramble
MIKE ROWE's letter and
number puzzles before
your time is up?



disc alternatives, this I therefore started to use my old version 3.00s cartridge to finish Countdown.

Suddenly the number checking routine went haywire. After much cursing and shoving of pencils I traced this to the VAL() function which apparently does not operate correctly after using it once.

The F80 B or the S40 which prints the value of B out of your behind the test window for some reason does this and allows the program to function normally. I hope this saves someone else a lot of wasted time.

PROGRAM MAP

20-40 Long
500-549 Countdown routine
100-199 Main for program
200-299 Check for valid numbers
300-399 Check number routine
400-599 Sound routines
1000-1020 Letters game
2000-2020 Numbers game
3000-3200 Countdown game
4000-4500 Score page
5000-5100 Endings

MAIN VARIABLES

I and J FOR 1000 variables
M Used as many points as number chosen and
all your word or letters game
N Number of letters chosen
O Number of letters chosen
P Number of letters chosen
Q Number of letters chosen
R Number of letters chosen
S Number of letters chosen
T Number of letters chosen
U Number of letters chosen
V Number of letters chosen
W Number of letters chosen
X Number of letters chosen
Y Number of letters chosen
Z Number of letters chosen

1 FOR 1000 VARIABLES

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Game

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Third of

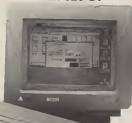
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Going out in a blaze of graphics glory

THIS month's article, the last in the series, takes a look at some non-standard graphics modes and rounds off with a non-standard display.

Right at the beginning I said 16 modes were available to the Atari user, but this can be stretched by a further 12 modes when you include test windows where available.

In reality things are not that simple. These 28 modes are only those directly available using the operating system on XL and XE models only.

Graphics modes 12-15 are available on the 400 and 800 but only by creating your own display list as demonstrated in the second article in this series.

In reality it is possible to get many more modes than this — would you believe over 100 different graphics modes?

Firstly there is another Atari mode which is not supported directly by any of the current machines. This is Atari Mode 3, which can be obtained easily by creating your own display list.

It is essentially similar to Graphics 0 but with one difference — it allows true descenders. That is the tallies the usually come properly below the rest of the letter.

This is because it interprets the data for the character differently. A normal character is 8 pixels wide by 8 lines deep. In Atari Mode 3 it is 10 lines deep and the two bottom rows lines appear blank. In addition some characters notably lower case as well as a few others are displayed with the last two bytes of the character appearing at the bottom of the character (see Figure 1 to 5).

As you might imagine the standard character set would not be suitable for this mode. You really

MIKE ROWE concludes his series on how to produce brighter displays

need a custom set.

In the example of Delta 1 I have used the internal set for brevity. However I have offset the character set one byte lower and moved the lower case to a last byte to the first bytes. This gives a workable version of the character set.

In addition to show the true lower case I have redefined some of the characters to give true descenders.

Basically several useful modes are based on Graphics 9, 10, 11. As Dave Russell mentioned last month the last Atari produced did not have Graphics 9-11.

Before late 1979 the computer had a chip called GTIA, which provided Graphics 0 to 8 only. After this they fitted the GTIA chip drawing

the three new modes.

In fact the display list is exactly the same for these modes as it is for Graphics 8.

The benefit of the difference lies in memory location 823. Numbers from 0 to 15 are coded here in the use of player-reminder graphics to decide priority — that is which player shows in front or behind what.

However numbers from 84 up — bits 6 and 7 — will enable the GTIA modes.

If on Graphics 8 you poke 823 84 bit 6; you get Graphics 9. POK 823 128 bit 7; gives Graphics 10 and POK 823 192 bits 6 and 7; gives Graphics 11.

Loading on logically from this, the same could be done in any mode. This gives a theoretical maximum of 62 full screen modes and a further 82 modes with test windows. That is a staggering 144 graphics modes.

Don't get too excited. This is indeed possible, but most of them are quite useless, some are identical to others and all the test windows are diagonal.

The last point can be circum-



Figure 1 Normal capital letter



Figure 2 Capital letter in Mode 3



Figure 3 Lower case letter



Figure 4 Lower case letter with true descenders

Display List

[illegible][illegible][illegible][illegible]

TABLE 1

Probably these new modes are definitely stable and significantly different. These are shown in Devices II and III.

Game Plus 7 colour (80 x 60) mode which takes only 4k of memory. Essentially it is a cross between Graphics 7 and Graphics 10. For some reason you can only get seven out of the eight colours of Graphics 10. Notice also that the colour registers used are not 0-7 as



Figure 1. Percentages of respondents who reported that they had ever used a mobile phone to access the Internet.

[illegible][illegible]

	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985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Display List

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Apart from this, the model is just like Graphcon 10 but with half the vertical resolution and half the memory usage. Similar laptop models can be used with Graphcon 9 and 11 but are probably less useful.

Game 15 is a seven digit 3D. 12 bit mode which is a cross between Graphics 1 and Graphics 10 by using Graphics 1's seven colour 3D/24 mode can be achieved! Again, because of the way the operating system works, seven colours as above are available. Also as in Graphics 10 proper only 84 different characters can be displayed at once - characters 32 to 95 - again to 2 (if the other characters are selected).

Colour register location	Colour numbers drawn	Colour displayed
704	0 1 4 5	0 (Background)
705	2 6	2
706	3 7	3
707	—	3
708	—	—
709	2	2
710	50	10
711	11	11
712	—	11
	8 12 13 14 15	8

100

they appear as an allowable character but in a different combination of colour. This is much the same as Graphics 3 and in fact the different colours are obtained:

However, this cannot explain the availability of justice claims. The

ollars because of the way the character set data is interpreted. A normal character is 11 good by post controlled by eight bits giving a horizontal resolution of eight v-

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1000	FFFF	FFFF	00
1004	FFFF	FFFF	0000
1008	FFFF	FFFF	0000
1012	FFFF	FFFF	0000
1016	FFFF	FFFF	0000
1020	FFFF	FFFF	0000
1024	FFFF	FFFF	0000
1028	FFFF	FFFF	0000

```

100 FOR I=0 TO 4:READ A:PRINT A:GOTO 110
101 READ A:GOTO 110
102 PRINT "TOTAL OF 5 NUMBERS =";A:GOTO 110
103 PRINT "END OF PROGRAM"
104 END
105 FOR I=0 TO 4:READ A:GOTO 110
106 GOTO 110
107 END

```

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1990年 10月 10日 星期日 10月 10日 星期日

1. 主成分分析 (PCA)

主成分分析 (Principal Component Analysis, PCA) 是一种统计方法，用于降维和提取数据中的主要信息。它通过线性变换将原始数据转换为一组互不相关的主成分，这些主成分按照方差大小排序，通常只保留前几个主成分，以减少数据冗余并保留大部分信息。

2. 聚类分析 (Cluster Analysis)

聚类分析 (Cluster Analysis) 是一种无监督学习方法，用于将数据集中的对象分组，使得同一组内的对象具有较高的相似性，而不同组之间的对象具有较低的相似性。常见的聚类算法包括 K-均值聚类、层次聚类等。

3. 决策树 (Decision Tree)

决策树 (Decision Tree) 是一种监督学习方法，用于分类和回归任务。它通过构建一个树状模型，根据特征值进行决策，将数据划分为不同的类别或预测值。决策树模型易于理解和解释，广泛应用于数据挖掘和机器学习领域。

4. 支持向量机 (Support Vector Machine, SVM)

支持向量机 (Support Vector Machine, SVM) 是一种监督学习方法，用于分类和回归任务。它通过寻找一个超平面，将不同类别的数据点分隔开，使得分类的间隔最大化。SVM 在处理高维数据和非线性可分数据时表现出色。

5. 神经网络 (Neural Network)

神经网络 (Neural Network) 是一种模拟人脑神经系统的计算模型，用于处理复杂的非线性问题。它由输入层、隐藏层和输出层组成，通过调整权重和偏置来实现对数据的拟合。神经网络在图像识别、自然语言处理等领域取得了显著成果。

6. 遗传算法 (Genetic Algorithm, GA)

遗传算法 (Genetic Algorithm, GA) 是一种基于自然选择和遗传学原理的优化算法。它通过模拟生物进化过程，包括选择、交叉和变异等操作，来寻找问题的最优解。遗传算法常用于解决组合优化问题和参数优化问题。

7. 模糊推理 (Fuzzy Inference)

模糊推理 (Fuzzy Inference) 是一种处理不确定性和模糊信息的推理方法。它基于模糊集合理论和模糊逻辑，通过模糊规则和模糊推理过程，将模糊输入转换为模糊输出。模糊推理在专家系统、控制理论和决策支持系统中有广泛应用。

8. 数据挖掘 (Data Mining)

数据挖掘 (Data Mining) 是从大量数据中发现有用信息的过程。它结合了统计学、机器学习、数据库技术和可视化技术，用于发现数据中的模式、关联和异常。数据挖掘在市场营销、金融分析和医疗诊断等领域具有重要应用。

9. 数据可视化 (Data Visualization)

数据可视化 (Data Visualization) 是将数据以图形化的方式呈现出来，以便于理解和沟通。常见的数据可视化方法包括柱状图、折线图、饼图、散点图等。数据可视化可以帮助人们直观地看到数据的分布、趋势和关系。

10. 数据清洗 (Data Cleaning)

数据清洗 (Data Cleaning) 是数据预处理的重要步骤，旨在去除数据中的噪声、缺失值和异常值，提高数据的质量和可靠性。数据清洗通常包括数据检查、数据修正和数据删除等操作。

11. 数据集成 (Data Integration)

数据集成 (Data Integration) 是将来自不同数据源的数据合并到一个统一的数据库中，以实现数据的共享和协同工作。数据集成需要考虑数据格式、数据结构和数据语义的兼容性。

12. 数据安全 (Data Security)

数据安全 (Data Security) 是保护数据免受未经授权的访问、泄露和破坏的措施。数据安全包括数据加密、访问控制、审计和备份等技术。数据安全是信息系统的核心要素之一，对于保护个人隐私和企业机密至关重要。

13. 数据治理 (Data Governance)

数据治理 (Data Governance) 是指通过制定政策和标准，确保数据的质量和合规性。数据治理包括数据质量管理、数据生命周期管理和数据合规性管理等方面。数据治理是组织实现数据驱动决策的基础。

14. 数据隐私 (Data Privacy)

数据隐私 (Data Privacy) 是指保护个人数据不被非法收集、使用、披露和销毁的权利。数据隐私是个人信息保护的重要组成部分，也是企业履行社会责任的表现。数据隐私保护通常通过数据脱敏、匿名化和加密等技术来实现。

15. 数据伦理 (Data Ethics)

数据伦理 (Data Ethics) 是指研究数据使用中的道德规范和行为准则。数据伦理关注数据收集、使用和共享过程中的公平、透明和问责问题。数据伦理是数据科学领域的重要研究方向，旨在确保数据技术的健康发展。

16. 数据科学 (Data Science)

数据科学 (Data Science) 是一个跨学科领域，结合了统计学、计算机科学和领域专业知识，用于从数据中提取知识和洞察。数据科学涵盖了数据收集、数据清洗、数据分析和数据可视化等各个环节。数据科学在各行各业都有广泛应用，是推动创新和发展的关键力量。

17. 大数据分析 (Big Data Analytics)

大数据分析 (Big Data Analytics) 是指对海量数据进行快速处理和分析，以发现其中的模式和趋势。大数据分析通常涉及分布式存储和计算技术，如 Hadoop 和 Spark。大数据分析在金融、医疗、零售和物流等领域具有广泛的应用前景。

18. 数据科学教育 (Data Science Education)

数据科学教育 (Data Science Education) 是指培养数据科学人才的教育体系。数据科学教育通常包括统计学、机器学习、数据可视化等课程。数据科学教育旨在培养学生具备数据分析和解决问题的能力，以适应快速发展的数据科学领域。

19. 数据科学竞赛 (Data Science Competition)

数据科学竞赛 (Data Science Competition) 是指通过举办比赛，激发数据科学爱好者的兴趣和创造力。数据科学竞赛通常提供真实的数据集和明确的问题，参赛者需要通过分析和建模来解决这些问题。数据科学竞赛是展示数据科学技能和交流经验的重要平台。

20. 数据科学社区 (Data Science Community)

数据科学社区 (Data Science Community) 是指由数据科学爱好者和专业人士组成的交流群体。数据科学社区通过线上论坛、线下会议和研讨会等方式，促进成员之间的知识分享和合作。数据科学社区是数据科学领域的重要支持系统，有助于推动数据科学的发展。

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項目	金額	項目	金額	項目	金額
1. 現金	100.00	2. 銀行	200.00	3. 有価証券	300.00
4. 貸倒引当金	40.00	5. 繰上金	50.00	6. 繰下金	60.00
7. 繰上金	70.00	8. 繰下金	80.00	9. 繰上金	90.00
10. 繰下金	100.00	11. 繰上金	110.00	12. 繰下金	120.00
13. 繰上金	130.00	14. 繰下金	140.00	15. 繰上金	150.00
16. 繰下金	160.00	17. 繰上金	170.00	18. 繰下金	180.00
19. 繰上金	190.00	20. 繰下金	200.00	21. 繰上金	210.00
22. 繰下金	220.00	23. 繰上金	230.00	24. 繰下金	240.00
25. 繰上金	250.00	26. 繰下金	260.00	27. 繰上金	270.00
28. 繰下金	280.00	29. 繰上金	290.00	30. 繰下金	300.00
31. 繰上金	310.00	32. 繰下金	320.00	33. 繰上金	330.00
34. 繰下金	340.00	35. 繰上金	350.00	36. 繰下金	360.00
37. 繰上金	370.00	38. 繰下金	380.00	39. 繰上金	390.00
40. 繰下金	400.00	41. 繰上金	410.00	42. 繰下金	420.00
43. 繰上金	430.00	44. 繰下金	440.00	45. 繰上金	450.00
46. 繰下金	460.00	47. 繰上金	470.00	48. 繰下金	480.00
49. 繰上金	490.00	50. 繰下金	500.00	51. 繰上金	510.00
52. 繰下金	520.00	53. 繰上金	530.00	54. 繰下金	540.00
55. 繰上金	550.00	56. 繰下金	560.00	57. 繰上金	570.00
58. 繰下金	580.00	59. 繰上金	590.00	60. 繰下金	600.00
61. 繰上金	610.00	62. 繰下金	620.00	63. 繰上金	630.00
64. 繰下金	640.00	65. 繰上金	650.00	66. 繰下金	660.00
67. 繰上金	670.00	68. 繰下金	680.00	69. 繰上金	690.00
70. 繰下金	700.00	71. 繰上金	710.00	72. 繰下金	720.00
73. 繰上金	730.00	74. 繰下金	740.00	75. 繰上金	750.00
76. 繰下金	760.00	77. 繰上金	770.00	78. 繰下金	780.00
79. 繰上金	790.00	80. 繰下金	800.00	81. 繰上金	810.00
82. 繰下金	820.00	83. 繰上金	830.00	84. 繰下金	840.00
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97. 繰上金	970.00	98. 繰下金	980.00	99. 繰上金	990.00
100. 繰下金	1000.00				

[illegible]

character This new mode is very like Graphics 12 (Area 4) in that the eight bits give a horizontal resolution of larger character – that is, each pixel of the character is controlled by two bits, allowing control over the colour of each pixel. The character is therefore laid out as in Figure 91.

In Genesis 13: this gives four colours (five with green) but in addition to the other method of colour selection mentioned before seven colours become available at the same time. Therefore a colour character set is generated.

Due to the peculiarities of the made-rental capital letters do not show up. Lower case and inverse will print the character in different colours as will printing characters 0-31 and 98-127 normally and in inverse. This is not straightforward in the way it occurs and is best discovered by experiment.

All the GTIA modes anticipate character sets like Pac and the more like the text windows are flexible. A

best resolution is easily obtained, however, by using a Display List interrupt to change back from the GTIA mode at the last window. This is shown in Demo 96, but the principle will work with any GTIA mode.

Some of the examples above may be difficult to grasp at first, especially III. But if studied carefully they are amazingly straightforward. Feel free to experiment with the program to discover those.

Finally to illustrate the power of the choice, let's take to power a



Table 1

problem posed by Simon Greenley. He wants a display comprising one row of Mode 2, 112 rows of Mode 16 and a single row of Mode 0.

Although quite possible that it is from the natural combination of screen modes. First, he has fixed his screen on an 8k mode - Graphics 16.

You may remember I mentioned my screen display crossing a 4k boundary needs a new load memory scan instruction in the display list before the 4k boundary is crossed.

In the Ek model, this therefore means that the list of trade partners is interrupted half way down, by three members.

The first is the mode number – say 14 for Basic mode 15 – + 64. This tells the operating system that the next two numbers are the low and high bytes of the address memory after this point, that is it points to the next 4K block of screen memory.

If you have problems with the display, hit Alt+F5. The screen

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Figure 6

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K.E.C.M.

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Display List

memory may well no longer remain consecutive at the cost

The second problem was in the decision to have a 0 replace 2 line at the top of the display. This obviously causes problems as above. However, in addition this mode requires very 20 bytes of memory per line. Graphics 16 requires 40 bytes per line.

As the OS expects 40 bytes per line everything below the Graphics 2 line will be offset by half the alignment. Also the second 4k block of screen memory will be 50 bytes out of alignment with the first 4k of address memory.

For results for the generalized Riesz theorem, see below.

Yet if there are many solutions really, but I think the easiest, and probably shortest is shown in Diagram 12.

Here I have considered each of the three modes as individual screens. I started with a Graphics 15 full screen display, changed the top line to Graphics 2 and kept a track of the position of the start of screen memory for that line as L21 and H11.

I then inserted a new local memory unit available (LMS) and offload the screen memory for this by 120 bytes. This is to avoid the necessity for moving the location of the user LMS which is there to cope with the 4k boundary which is crossed by Screenshot 14.

1 Again kept track of the start of this block of storage memory in UGR and H12. Finally after the requisite number of Graphics 15 lines I again inserted an LMS for the next Graphics 9 lines. The display list is ended straight after this.

Now we have the display needed to treat each part as a separate screen or possibly as a part of another. This makes as well as taking the trade of the area of screen we are using into account. We must also take the start of memory for that block of screen into account.

The easiest way to do this is as a set of subqueries to be called. This will also mean that each table gets at least one O/G thus avoiding pointing to position 1170 which could otherwise occur. The O/G would not allow this as function 0.

Phew—glad I got that off my chest. I think I'll take a break now and finish that report I'm working on.

[illegible][illegible]

Checklist

項目	2017年12月31日	2016年12月31日	2015年12月31日	2014年12月31日
現金及現金等價物	1,234,567	987,654	765,432	543,210
應收賬款	567,890	432,109	321,098	210,987
應付賬款	(123,456)	(98,765)	(76,543)	(54,321)
其他應收款	234,567	187,654	143,210	98,765
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流動資產總額	1,825,914	1,458,020	1,108,876	855,432
非流動資產	345,678	298,765	234,567	187,654
總資產	2,171,592	1,756,785	1,343,443	1,043,086
流動負債	(456,789)	(345,678)	(234,567)	(187,654)
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Checklist

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WE LUV ATARI - DO YOU?

The light and sound of the party!



WITH the party season once again imminent, there should be plenty of call for STEPHEN PAINCE's Disco program. With it, your Atari will be the light and soul of the party.

It will display a pattern on the screen which will beat (pulse) in time with music played into the Atari via the 1010 tape recorder.

To use the program simply RUN it, press RESET, RUN again, place your chosen cassette in the tape recorder and press PLAY.

Note that we've printed two different versions of the program. We first a test display and the second random.

It makes use of these memory locations: \$3776, \$3779, \$3867, \$3823, \$3836, \$3866, \$3871, \$3867, \$3866, \$3910, \$3836, \$3867, \$3867, \$3866, \$3866, \$4016 which come in pairs of 16, that is \$3776 + 16 = \$3794.

These locations react differently, depending upon certain things. If you switch on and type

```
10 GRAPHICS 0
20 POKE $4016,$2
30 A=POKE($3779) - or any of
the above locations
40 ? A
50 GOTO 30
```

and then press a key, the value at location \$3776 will be 123. If you play speed into the music, the values will also be 103 and 103. Normally the value will be 127.

If you then press Reset and run the program the values found in the location will be 235 when there is sound of a strong enough level, 251 when a key is pressed and 255 normally.

When you want to use the program press RUN, then Reset. Place a music cassette in the recorder and press Play.

POKE \$4016,0 will disable the tape recorder.

Locations 706, 709, 710, 711 are used to control the colours. The following values give the following colours:

0-15	black/white
16-25	red/gold
26-63	orange
64-87	red/orange
88-111	pink/purple
112-85	purple-purple/blue
86-88	purple-purple/blue
100-113	blue
114-127	blue-blue/white
128-141	tear-posee
142-155	green/blue
156-169	green
170-183	yellow/green
184-197	orange/green
198-211	orange-orange/white
212-225	orange-green/white
226-239	orange white
240-254	orange white

PROGRAM 1 STRUCTURE (SET DISPLAY)

10-30	SETS arguments controlling program name colour and graphics
40	POKE variables
60	Screen Graphics 1 mode
70	Screen Graphics 1 mode
80	Screen Graphics 1 mode
100-113	Screen Graphics 1 mode
114-127	Screen Graphics 1 mode
128-141	Screen Graphics 1 mode
142-155	Screen Graphics 1 mode
156-169	Screen Graphics 1 mode
170-183	Screen Graphics 1 mode
184-197	Screen Graphics 1 mode
198-211	Screen Graphics 1 mode
212-225	Screen Graphics 1 mode
226-239	Screen Graphics 1 mode
240-254	Screen Graphics 1 mode

PROGRAM 2 STRUCTURE (RANDOM DISPLAY)

10-30	SETS arguments controlling program name colour and graphics
40	POKE variables
60	Screen Graphics 1 mode
70	Screen Graphics 1 mode
80	Screen Graphics 1 mode
100-113	Screen Graphics 1 mode
114-127	Screen Graphics 1 mode
128-141	Screen Graphics 1 mode
142-155	Screen Graphics 1 mode
156-169	Screen Graphics 1 mode
170-183	Screen Graphics 1 mode
184-197	Screen Graphics 1 mode
198-211	Screen Graphics 1 mode
212-225	Screen Graphics 1 mode
226-239	Screen Graphics 1 mode
240-254	Screen Graphics 1 mode

[illegible][illegible][illegible]

表 1 2002 年 10 月 1 日以前 5 年內 10 項主要經濟活動的總額及佔總額的百分比					
經濟活動	總額	佔總額的百分比	經濟活動	總額	佔總額的百分比
1. 製造業	1,140,000	14.5%	6. 批發及零售業	1,140,000	14.5%
2. 建築業	1,140,000	14.5%	7. 餐館及酒店業	1,140,000	14.5%
3. 地產及地產代理業	1,140,000	14.5%	8. 金融及保險業	1,140,000	14.5%
4. 運輸及倉庫業	1,140,000	14.5%	9. 資訊及通訊業	1,140,000	14.5%
5. 貿易及零售業	1,140,000	14.5%	10. 其他	1,140,000	14.5%

100

[illegible][illegible][illegible]

Tired of
boring?

What information is
your Register showing
either on Page 85

Those special characters


RECENTLY we've had several enquiries about how to produce the special characters which sometimes appear in our listings. It's because of this uncertainty that we prefer authors not to use such characters.

However, we recognise that sometimes it's the simplest way and occasionally it's the only way of doing something. For that reason we're printing the two tables below. These show how to produce the special characters from the keyboard.

We've shown a box around the characters so that you can see their position more clearly. These boxes won't appear either on-screen or in the listings we print.

The Control and Shift keys are used by holding them down while you press another key. For example, if you read CTRL-A, you hold down the CTRL/CONTROL on L1 machine(s) key and press A.









































The ESC key is like a normal key: simply press it. For example, if you read ESC DELETE, you press and release the ESC key and then press and release the DELETE key.









































The Reverse Video Mode key has been abbreviated to REV. On early machines that key (see the Atari logo) while on XL machines it has a  design on it. If this key is pressed and released once, all subsequent input will appear in reverse, (or inverted) on the screen. You turn Reverse Video Mode off by pressing the key again.

For example, if you read REV CTRL-P the sequence of operations would be:

- 1 Press and release REV key to turn on Reverse Video Mode.
- 2 Hold down CTRL key and press and release P key.
- 3 Release CTRL key.
- 4 Press and release REV key to turn off Reverse Video Mode.

It's easy to make mistakes with the special characters, which is why we prefer not to use them. If you do use them, take extra care.

NORMAL VIDEO			
KEY	TYPE	KEY	TYPE
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -
	CTRL -		CTRL -

REVERSE VIDEO			
KEY	TYPE	KEY	TYPE
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
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	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -
	REV CTRL -		REV CTRL -



HAVE you ever felt left out in the cold when it comes to Basic programming on your Atari, especially when you compare it to the Amstrad and BBC Micro models?

Well there is no need to hang your head in shame any longer. With the aid of Optimized Systems Software's Basic XL, you too can turbocharge your Atari.

Basic XL is an alternative Basic to the one you were supplied with by Apple, either in ROM form for the 400/800 series or built in on the XL/900 series.

Since Atari Basic was written by OSS in the first place, you can be sure that Basic XL is fully compatible with any programs you already have. But more about that later.

As supplied, Basic XL comes as a bright orange ROM cartridge, complemented by a beautifully-produced 48 yellow ring binder containing more than 300 pages of information about the software.

The manual is split into two parts. The first section, and also the largest, is a comprehensive tutorial on how to program in Basic for the complete novice onwards. The second half of the manual details each of the commands available with Basic XL.

When you think of the sprawling documentation supplied with the XL, needless to say, the manual supplied by OSS is welcome news indeed.

As for the ROM cartridge, it really is a wolf in sheep's clothing.

Basic XL is a full blown 128K ROM, but because of clever software and hardware engineering inside the cartridge, your Atari only uses 64K of RAM when installed. In other words, you get the benefit of 128K Basic taking up no more memory than the standard Atari 64K Basic.

Truly a case of squeezing a quart into a pint pot.

So what's special about Basic XL? Well you get 48 extra commands not included in Atari Basic. For a start, if you're a chess user, I bet there's been many a time you've cursed not being able to find out what files are on your disc, without having to go into the DOS menu.

With Basic XL, all the commands to list a directory, look and delete files, rename files and delete files from disc

Basic XL A WOLF IN SHEEP'S CLOTHING?

STEPHEN DONOGHUE puts
an extended Basic language
package through its paces

are all there at your fingertips.

The ability to do these on the move is worth the purchase of the cartridge on itself.

Still not convinced? Based on Basic XL doesn't give a host about how you type in your commands. It will quite helpfully accept lower case instead, video, or any combination of typing style that suits you, all without

inducing fear of rearing.

Program logic is more controlled. Besides IF...THEN statements, we also have IF...ELSE...ENDIF and WHILE...ENDWHILE statements to play with.

The string statements, LEFT\$, RIGHT\$, MID\$, are supplied as well as the standard Atari sub-string commands.

String arrays are supported, and if you intend to use a string variable in your program and its length will not exceed 40 characters, there is no need to dimension it beforehand.

Player/Missile commands direct from Basic are there to be explored. I'd never bothered with player graphics before, mainly due to the enormous amount of work needed to create the shape, place it in memory, then animate it.

With no prior knowledge of player/missile graphics, I plucked an

**... you too can
turbocharge your
Atari**

throwing your lines of Basic program out as text on a screen.

When you list your program, Basic XL has converted the text into normal video, with variables beginning with capital letters, and the remaining letters in lower case. Not only that, but all FOR...NEXT loops are

the manual and within 15 minutes I had a spaceship whizzing around the screen under joystick control. It's that easy.

While we're on the subject of joysticks, besides the named ST OK command, we also have HSTICK and VSTICK. These commands serve only the horizontal and vertical motions of the joystick respectively and help simplify controlling movement.

How many times have you written or had use of a program that requests

program is currently. If there's not enough, you can also bet to the screen or print a very variable and string variable used in your program, and what lines they were referenced on with the LVAR command.

My favorite, and the one I've kept and lost is the FAST command. As its name implies, that's just what it does.

Make FAST the first line of your program, and things really begin to move. In general, Basic XL runs about 20 per cent faster than Atari Basic when running standard benchmark programs.

But that doesn't tell the whole story. If you understand anything about the way Basic works, you'll know that it is an interpretive language. By that I mean it has to translate into machine code each and every line of your program at runtime.

Not only that, every time a GOTO or GOSUB statement is executed in order to find the target line referenced, Basic must read all the line numbers from the beginning of the program to find out where it has to go.

That's one of the main reasons that Basic is so slow, and also why Basic programmers keep all their frequently called subroutines at the beginning of

subroutines.

By the time the program was de-bugged and fully functional it was nearly 20k long.

As an afterthought, I decided to add another subroutine which made nice presentation screens for the beginning of the program, fixing whatever else I put in the subroutines.

Basic XL is about 57 times faster than its Atari counterpart

was at the very end of the program and was the first one called.

By use of the FAST command the opening screen appeared almost instantly and ran smoothly as I designed it to be.

As an experiment, I timed the opening subroutine to see how long it would take to execute with the FAST command removed from Basic XL. The difference was very noticeable - Basic XL took 20 times longer to execute the subroutines.

In other words, without the unique command my program could not run as I intended without a major rewrite.

That covers some of the new commands of Basic XL. There are a whole lot more, I haven't even attempted to describe, but are just as much fun to use.

Furthermore, if O88x (O88 XL) is used in conjunction with Basic XL, some very interesting and useful new features come into play. But that's another story.

So is Basic XL worth buying? At a price of £75 or so, it's almost the cost of an Atari 8000X.

However, you do get a powerful Basic which is more friendly and if you're new to the programming game, the accompanying manual is an immense help.

As for compatibility, 95 per cent of your programs will still run - but faster.

Don't forget, Basic XL was made to be compatible with Atari Basic, not the other way around.

With all these wonderful new commands at your disposal, who wants to use old fashioned Atari Basic anyway?

... the benefit of 16k ROM for no more memory than standard Atari 8k

over input and wish that printing would disappear or better still replace it with something more useful? Once again, Basic XL has the answer.

Using one of the 15 SET commands you can have any character you like as the prompt to an INPUT statement, or if you desire no character at all.

Other SET commands allow you to decide the Break key, set TAB stops for the cursor in Print statements, choose how your program looks when it is LISTed and decide whether you wish just error numbers to appear when you make a mistake or to have printed a short message explaining the error as well.

One other command that proves useful is MOVE which can copy blocks of memory at machine code speed.

If you've ever re-defined a character, you know that every character has to be moved byte by byte from ROM into RAM where you can then alter the characters to suit your needs.

I wrote a program to compare the two methods and Basic XL was about 57 times faster than its Atari counterpart.

For program development you can have automatic line numbering, line re-numbering and block deletion of lines.

If your program has a bug in it you can use the TRACE command which lets you see at which line number the

... with no prior knowledge of graphics I had a spaceship whizzing around within 15 minutes

the program. That way, Basic finds its way around much easier.

What the FAST command does is pre-compile every line number called in a GOTO GOSUB TRAP statement and so forth. When the program is running, each target line is found instantly.

To give an example, I wrote a Basic program for my eight year old niece which helped her with simple addition, subtraction and multiplication sums.

The program made extensive use of the Atari's graphics 18 mode and was made up almost entirely of

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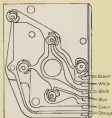
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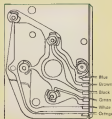
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The right-handed wiring

Left-handed? Then stop right here...



The left-handed wiring

HAVE you noticed how many "lefties" there are these days? No, I don't mean the sort that the Tory party are against, I mean left-handed people.

Joystick manufacturers seem largely to ignore the problems which face left-handed users of right-hand designed joysticks, and the Atari joystick is no exception.

The normal playing position puts the firing button on the left and the player moves the joystick with the right hand.

This means that lefties have to use their stronger hand to push the button and their weaker hand to move the stick.

This is great if you're playing a left-handed person in competition, but not so great if you happen to be that left-handed person.

If you have an Atari joystick, it can easily be converted for left-handed use as follows.

Open the joystick by removing the four screws from the bottom and peeling the top off. In the base you'll find a printed circuit board with six wires attached.

In fact there are two types of board — the type we've shown here with all six wires on one side, and another type with three wires on each side. In fact, it doesn't matter which type you have, because they follow the same colour coding.

Make the wiring changes by unplugging the wires from the circuit board and clipping them into the new positions. They should just pull off and push on the board with no problem.

When you've got the wires in the new positions, screw the whole thing back together and open the word "Top" that's embossed into the case.

Simply hold the joystick so that the firing button is on the right-hand side and move the stick in the normal way.

There you have it — a left-handed joystick.

It will improve your performance and cause no end of confusion for your right-handed chums!

Business package can roll out the £s

RECENTLY I bought what was described as a business package consisting of an IBMPC computer, a 1000 disk drive, a 100T printer, VisiCalc and AmiWriter.

At the time it seemed an excellent bargain and I went out to be very glad indeed, particularly the printer. However, there was one snag.

The AmiWriter program came on a disk the reverse side of which printed the manual.

They contained no version of the international characters which require the English second page, which is essential for business purposes.

I feared that the extensive revision of their program included almost everything which produces all the international characters. For example, Ctrl-06 produces the pound sign, but this does not work with the disk.

It is the same version as earlier programs in that it has no characters for the pound sign and other international characters available for the publisher. — **G.H. Robinson, Mansfield**

■ The disk version of AmiWriter does have the features you mentioned. Ctrl in order to use a pound sign which is Ctrl-06 followed by 0 as you see you must first set the Ctrl to use the international character set.

Thank you for the printer's

you intend of POKE 768:204 for the screen.

To do this use Ctrl-06 followed by 57 then Ctrl-06 and 53.

Once you have done this you can print any of the international characters listed in the code.

These codes apply mostly to the original and disk versions of AmiWriter and are the equivalent to LFNs. Toggling the top sequence BBC-BBC-W.

Missing some games

I OWN an IBMPC, but before that I had the 3860 VCS and some of the games for the original *Star Trek*. By *Accutron* were good games but not all available for the home computer.

Why is this? After all they don't wish *Accutron* which is also a good game.

In their spare time with putting them on cassette disc or another cartridge? — **Lloyd, Brighton**

■ Not all games from all

companies are brought in a lot of computers. The only way to get companies to bring you titles for the Atari is to let them know you want them.

You can do this in two ways. Firstly write to them and get your friends to do the same, telling them how many copies they'd sell if they did release it.

The second more practical point is the When they do release a game you like, buy it, don't accept a copy of it.

The last thing a company is prepared to do is specially commission a game to be written, costing tens of thousands of pounds, then have it rejected left right and centre.

Help in the manual

I'VE been with such a mess that I read the letter by R.H. Bates, in *Supersaver's Monthly*. I too had suffered the same problem with the printer *Accutron Filing Manager*.

My printer is a Star-Phoenix 80-10 and I found what further reading of the

manual that it has the capability of 7 or 8 in 4 operation from software control.

So a simple *CP/M*2+ came next into use the printer. Then *Star Phoenix Filing Manager* and the error would disappear.

For 80-10 to give a replacement for the *Star Phoenix 100* and that many other users will have heard of it they have access to the *Accutron* magazines *Accutron* and *Accutron*.

I would enter one plus to *Star Phoenix*. As they have produced the 80-10C, a *Commodore* compatible version of the 80-10 International and are compatible version? That is over the printer on separate entries.

It is a little late for me, but I am sure it would help the sales to *Star Phoenix*.

Finally thanks to *Accutron* and *Star Phoenix* for the letter which prompted me to read my printer manual again. I have found several useful tips in *Monthly*. — **Kevin Allen, Burton-on-Trent**

Check it again

I WROTE to you a couple of days ago regarding the *Accutron* *Handy* game and the difficulty in getting it to work properly.

Well, having decided to take the advice you always gave to other readers, I checked my setup by typing *LIST 10 - LIST 20* etc through the computer program and found nothing wrong.

So I did the same again. Nothing. After doing this four (4) times I eventually found a letter Q where there should have been a number 0. And

Interfacing to a printer

I HAVE recently bought an Atari 8000, and wish to interface it to other equipment in particular a Teletype printer. My

question is, cannot find any reference to the programming of either the serial or parallel ports within the Atari manual or any books available locally in the shops.

I would be grateful if you could publish this information for the benefit of myself and other users interested in the

more technical side of Atari computing. — **G.L. Davies, Huddersfield**

■ In order to interface a parallel printer to the Atari you will need an 8255 PPI interface. The best is the 8255 module but there are now very difficult to obtain.

If you find one — say 1000000 — it's a matter of some period are bringing out their own modules but we have not yet seen one on sale.

If you are very technically

inclined you could try to design your own interface on the parallel ports.

However, unless you are an experienced machine code programmer with a fairly good knowledge of electronics, we advise it. Don't mess about it.

Also, *Magazine* (Vol. 3/9) to 3/12) carried a series of articles about developing a serial interface for the Atari, and a letter in the back of the 3/11 computer.

don't have a steady sound after another 10 seconds the loading sound is heard once again.

Differ software and the Atari Group which is on the other side of the Atlantic write very well.

I am a beginner in computer / am very interested in your writing magazine. How often would you like to contact me if there is any possibility of getting other topics. Because in Poland there are a lot of new services and magazines. — **Wiktoria, Gliniec, Poland**

■ You will probably find that the game is still loading once already. The game is simply what the computer thinks that the memory is OK to run. For instance, that the end of the game loads into memory. Leave it for about five minutes after this I appear and you should be ready.

Many magazines and software/hardware items are available by mail-order in anywhere in the world. Why not try Giles Shop of Software before or one of our other advertisers?

You could also contact some of your own computer stores in Poland and inquire about the lack of Atari products!

Alternative inputs

COMPUTERS can produce visual and printed output in a variety of ways if they could accept visual input and even produce output?

I would like to develop software to allow my 80085 to use laser input and output paper that you can produce the name of a company which makes visual and audio displays some synthesizers and optical character readers, completely within Atari? — **Williamson, Leigh-on-Sea**

■ The sort of items you ask about are available for many machines and software is up to you. I'm afraid. You should be talking to thousands of people worth of equipment.

The best way to contact

such units to an Atari one via the RS-232 port on the 800 module. Alternatively, use the parallel ports in simple parallel or 1-bit input/output ports to custom designed devices.

Try contacting my own play advertising such devices for other machines to use. If they would be RS-232, sure possible.

Board open for calls

I AM writing to you on behalf of the Birmingham Atari Group which has recently opened up a new bulletin board the General Bt Group. Atari Bulletin Board

would also be a life.

For advertising progress would be run on relevant messages before the necessary program was required.

The feedback I received after the computer and also after given the mail to no information on writing data to and reading data from files and into programs.

Please send me reference material on what you can do and what you recommend a reference book on this subject. — **M G, Farnley, Boston**

■ You're right. The hardware provided with the 8000 are shabby in its lightweights. The programs which you submit, is of course very simple to make given the

begin to ask for the updated software which has some extra information regarding the 80, range.

Lost in the maze

I HAVE a couple about the game in the December Atari User. What month I want and in it read.

I get "Error 2 on line 8000". I looked that up in my manual, no final list of an input statement error — the data misinterpreted as input a value numerical value into a numerical variable.

Can you help me solve this up? — **P B, Harris, Leigh-on-Sea**

■ Check your listing? If you don't want to check a copy and the computer after on Page 81.

Program provided

I WOULD like to write a program that can program that will send a letter program which will be a money to find more than programs.

I hope to be able to find straight in to the Atari 800. I have a 1000 that does. — **A J, Lowe, Leigh-on-Sea**

■ The 800 2.0 does have a program on which does after you send the data from at the back of the magazine to send off the your copy if you have it yet get one.

Copying programs

I HAVE an Atari 800 and I have a 1000 disk drive. I don't mind copying software but when I do need in the chance of a copy of disk sending 2.0 have earned each down the drive.

Any responsible also drive owner would make a hard up of each program and I would if could, but the programs are protected.

So could you possibly

ATARI USER Mailbag

WE welcome letters from readers — about your experiences using the Atari machine, about tips you would like to pass on to other users, and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europe House
88 Chester Road
Hayes Grove
Stockport SK7 5LR

Service: Our phone number is 021-630 3761.

The board runs 24 hours a day, closed only on 4 days, any messages sent on Friday at 1800 hours — Mark Coleman, typing, Germany.

Lightweight handbook

I FOUND out on 80085 and a 1000 that there is the hope of writing programs that would be able to use data stored on disk for another program which accepted INPUT data, made certain checks on it and then sent the

right information.

But it seems the original INPUT and PRINT commands that you will also need to know how to use. OFFER probably with both real and random access files.

The best book for this sort of information is "Your Atari Computer" from Osborne/McGraw-Hill.

This covers Basic from first steps right up to some complex graphics facilities and complex I/O control which is what you want.

It doesn't cover things — about 217 — but it is worth every penny.

If you can't get one from your local stores try one of our mail order vendors. — **Dan**

mean some saving ain't gonna?

Also I am remembering buying a printer as a poster machine would be useful — **Parvin Bangal, Hattiesburg**

■ You have no soul one of the most debated points in the software industry because of the danger of viruses and impending legislation we will not be publishing any reviews or adverts of products designed primarily for copying software.

You have noticed a solid policy regarding personal back-ups of software but until the public can be convinced to pirate software by copying it illegally to their friends such protection will not only remain but become more complex.

These are viruses which can copy personal software — even if it's not in an index QT — but due to the possibility of misuse they are not generally imported into the country.

If you accidentally damage a disk or cassette which is protected, the company who made the program should provide you with a replacement at nominal cost providing you send them the faulty object's a copy of your receipt.

Running Hexer on 16k

COULD you please tell me whether your Hexer program and the subsequent random number program will run on an Atari 400 or 1500?

I have used a number of times only for the programs to crash after printing very few random numbers.

I would like to try to know if the hexage printed in your different magazines — **Word Fun** and **Prog Jump** — are suitable for my use from Atari 400 or 1500. I have had problems with character display.

Another thing I would like to know is if my computer can be upgraded with more memory and if so how high can it go?

Comments are a very good response only one suggestion I would make.

Substitute for string arrays

I've written a database program for my T1000/44 which involves using arrays and I would like to convert it for use on my 8000.

The problem is how to get string arrays to behave. The closest would be to use a number counter to the data with a different approach.

```
10 DIM A$(1000)
20 INPUT A$(COUNT)
30 LET COUNT = COUNT+1
40 GOTO 20
— David Stockton, Northwich
```

■ Atari Basic does not have string arrays as such but it does have long strings and sub-strings which can be used for the same end.

A long string is simply a string set up for thousands of characters long — like the whole of an area.

A sub string is a part of an area string, accessed by using two numbers in brackets after the string name.

For example A\$(10-40) would mean a smaller string

```
10 DIM A$(1000*40), B$(40)
20 A$(1) = A$(1000*40) + " " A$(1) = A$
30 INPUT B$, A$(COUNT-1)*40+1,
COUNT*40+40
40 LET COUNT = COUNT+1
50 GOTO 30
```

This is a little more complex than the T1000 but it does the job. Basic XL, Microsoft Basic are all have string array operations but it is the techniques themselves which are using one of these languages — **André Willey**

Because the other Mailbag page has your reader mail that how much memory is needed for string? — **G. Davidson, Newcastle upon Tyne**

■ Most things are put on the more than 15k I've used. Hexer will run on a 15k machine but its default address of 84000 will not be correct since that is actually beyond your machine's RAM

size. All memory everything from character 10 to character 80 of A\$.

These two features can be put together to write our own string array routines.

Let's say we want to store a simulated string array for apple. MAX items will be up to 500 characters long.

Let's use ITEM to indicate which element we're talking about. 55 will be a temporary holding string.

```
Now you have GEM the
string with
DIM A$(MAX*500),
B$(500)
```

Then fill it with spaces. A\$(1) = " " A\$(MAX) = " " B\$(1) = " " B\$(500) = " "

To set element ITEM in our array use INPUT B\$ A\$(ITEM-1)*500 + 1, ITEM*500+50

To read element ITEM back, right use B\$(ITEM-1)*500 + 1, ITEM*500

Thus your example (changing up to 40 characters per item) becomes

full 40k but you may find it difficult to get the upgrade card these days. Try the major mail order companies or a local Atari specialist.

Putting an internal and separate soldering on to the computer's motherboard so should not be stamped by the courts.

Memory update

I AM 80 a 8000, and want to upgrade the memory. Where can I get one and how much will it cost for a RAM card to upgrade to 40k?

Where can I get what's what price a hard expanding on help so provide the POSE number?

How do you replace a program listed in cassette using LIST G? I have tried everything and just keep getting ERROR 21

— **Sam Stockton, Poole, Dorset**

■ On the first two points, the 8000 is cheap on memory space of its advances — they can't include everything in their code.

The book you might like to investigate is *Upgrading the Atari* by Ian Davidson, at a cost of about £15.

To install a LISTed program by BASIC C

Monitor

At the October issue of Atari Users you published a letter from Mr Gordon of Cornwall who was complaining that after he had purchased an 8000 from John Ship and found that user's club he noticed an introduction or some letter from Alan and neither did he bother.

In the reply to this letter you stated that the Atari Owners Monitor is only published quarterly.

I would like to clarify some points here. First, Monitor is a magazine published by the UK Atari Computer Owners Club every quarter and has no association with John Ship.

The Club is an independent organisation set up in 1979



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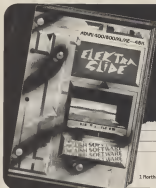
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- G. Selectable level of difficulty

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---	---	---

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